SOUTHWESTERN WILLOW FLYCATCHER AND YELLOW-BILLED CUCKOO SURVEY AND MONITORING AT SELECT SITES IN SOUTHERN NEVADA, 2009 ANNUAL REPORT

Southwestern Willow Flycatcher (Charles Lohman)

Yellow-billed Cuckoo (Polly Sullivan)

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

Standardized presence/absence surveys and nest monitoring at select sites in southern Nevada were continued by the Nevada Department of Wildlife (NDOW) in 2009 for the federally endangered Southwestern Willow Flycatcher (*Empidonax traillii extimus*), and the Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*), a candidate species under the Endangered Species Act of 1973, as amended (ESA)..

Southwestern Willow Flycatchers breed in dense native riparian habitats, and their recent population declines have been attributed to the loss, fragmentation, alteration and/or degradation of breeding habitat, brood parasitism by Brown-headed Cowbirds (*Molothrus ater*), nest predation and loss of wintering habitat. Surveys were conducted at numerous sites in five different geographic areas. Standardized protocols were followed and playback recordings of willow flycatcher songs and calls were utilized. Over 140 hours were spent conducting surveys, resulting in the detection of 27 resident adult willow flycatchers, consisting of 12 pairs and three singles. Eight nests were confirmed and 23 young were known to successfully fledge. All nests were constructed in Coyote Willow (*Salix exigua*).

Yellow-billed Cuckoos breed in woodlands with clearings and dense shrub understory, usually associated with watercourses. The cuckoo has declined from much of its historic range in the western U.S, and these declines have been linked to pesticide use, loss of riparian habitat in nesting areas as a consequence of fragmentation, inundation by reservoirs, stream channelization, and urban development. Standardized protocols were followed and playback recordings of willow flycatcher songs and calls were utilized. NDOW spent 50 hours conducting surveys resulting in no cuckoo detections. No nests or young were detected or documented during the surveys.

Management recommendations for both species include:

- continuation of survey and monitoring efforts at known breeding sites to assess species status and life history parameters;
- develop new and cultivate existing partnerships with private landowners to identify and monitor willow flycatcher and cuckoo breeding territories on private lands, and encourage participation in Conservation Easements, Safe Harbor Agreements and Landowner Incentive programs;
- continue to manage for willow flycatchers and cuckoos on state and federal lands, promote habitat restoration and reduce the effects of potentially harmful land use practices that may impact breeding habitats, including improper grazing, water diversion and drawdowns, and destruction of suitable riparian habitats;
- continue to coordinate and collaborate with other agencies and consultants to collectively achieve downlisting and delisting goals and objectives put forth in the Southwestern Willow Flycatcher Recovery Plan, and to preclude listing of the Yellow-billed Cuckoo.

Southwestern Willow Flycatcher

INTRODUCTION AND BACKGROUND

The southwestern willow flycatcher (*Empidonax traillii extimus*) (willow flycatcher) is a small passerine neotropical migrant passerine that breeds in the riparian habitats of seven southwestern states including New Mexico, Arizona, California, Utah, Nevada, Colorado, and Texas (Sogge 1997), and winters in Central and South America. It is one of 10 species of *Empidonax* flycatchers found in North America, and one of possibly five subspecies of willow flycatcher (Figure 1). All *Empidonax* flycatchers are extremely difficult to distinguish by sight alone; however, the willow flycatcher can be distinguished by its distinctive "fitz-bew" song. Further identification of resident subspecies in a particular area is determined by presence of birds during specific breeding time periods.

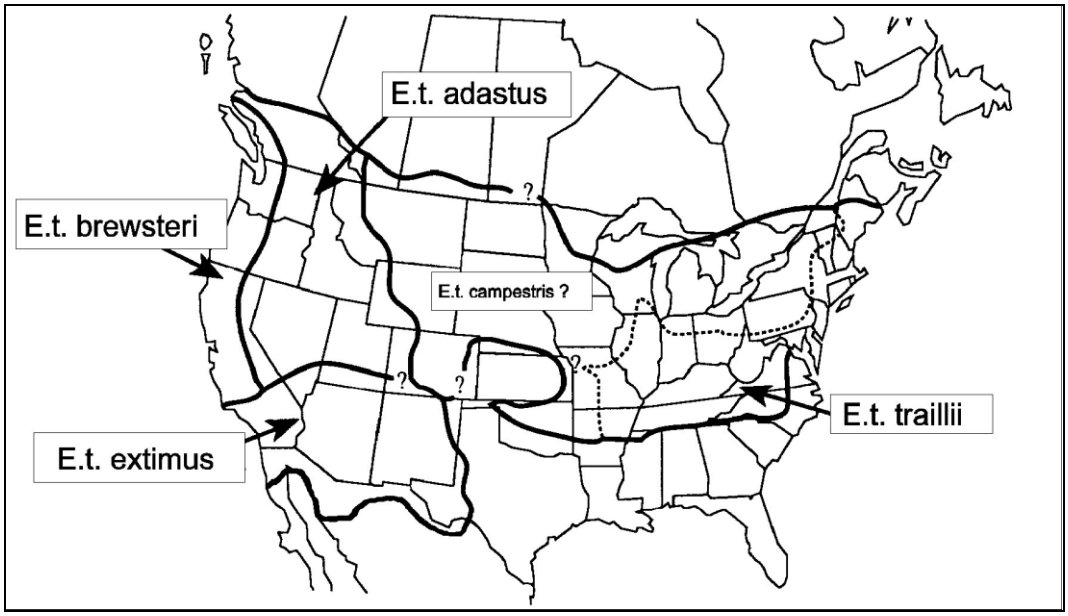

FIGURE 1. Breeding distribution of willow flycatcher (*Empidonax traillii*) subspecies. Adapted from Unitt (1987), Browning (1993), and Sogge et al. (1997).

Southwestern willow flycatchers typically arrive on their breeding territories by May or June and depart for wintering grounds in late August, resulting in an approximate 100-day breeding season. A breeding territory is often confirmed by the presence of a male singing from an exposed perch, and sometimes aggressively attacking other species intruding into its territory (Sogge et al 1997). Willow flycatchers do not appear to exhibit high nest fidelity, but do exhibit high site or territory fidelity. Dense vegetation near watercourses or inundated wetlands is required for nesting, thus the species is considered a riparian obligate breeder. In Nevada, preferred vegetation consists of willows (*Salix spp*.), cottonwoods (*Populus spp*.), tamarisk (*Tamarix spp.*), and Russian olive (*Eleagnus angustifolia*), among others. Preferred watercourses may include rivers, streams, springs or marshes. At some sites the water source may be ephemeral over the course of a year, but the habitat must support riparian vegetation during the breeding season.

The loss of riparian habitats, invasion of exotic plant species, brown-headed cowbird (*Molothrus ater*) (cowbird) brood parasitism, and loss of wintering habitats have contributed to the decline of this subspecies (McKernan & Braden 1999). The United States Fish & Wildlife Service (FWS) listed the southwestern willow flycatcher as an endangered species under the Endangered Species Act of 1973 (ESA) as amended in March 1995 and designated critical

habitat in July 1997. In 2002 the Southwestern Willow Flycatcher Recovery Plan was published, and final critical habitat designation published in November 2005. In Nevada, an 18.6 mile stretch of the Virgin River, from the Arizona/Nevada border to the upstream boundary of the Overton State Wildlife Management Area (WMA), was designated as critical habitat. Additional important habitat, including the lower Virgin River, Muddy River, Pahranagat National Wildlife Refuge (NWR), Key Pittman State WMA, and Overton WMA, were excluded as critical habitat under section 4(b)(3) of the ESA. According to this section, the benefits of excluding certain State or Federal Wildlife Areas or National Wildlife Refuge lands under appropriate management for southwestern willow flycatchers outweighs the benefits of their inclusion, as these lands are already managed for the conservation of the species. The flycatcher is also listed as state-endangered in Nevada, and as a species of conservation priority in the Nevada Wildlife Action Plan.

Since 1999 the Nevada Department of Wildlife (NDOW) has conducted standardized southwestern willow flycatcher surveys at select sites to accurately monitor and document details of individual nest success/failure. NDOW and other agencies have conducted surveys in appropriate breeding habitat at sites throughout southern Nevada, including the Virgin and Muddy Rivers, Lake Mead, Pahranagat NWR, Ash Meadows NWR, Oasis Valley, Mormon Mesa and Meadow Valley Wash. These surveys are cooperatively conducted by various agencies and private consultants, including: the San Bernardino County Museum, Stephen W. Caruthers Associates (SWCA), Southern Sierra Research Station, Bio-West Inc, NDOW, and others. This report only represents data generated and collected by NDOW personnel at selected survey sites, which are listed and described below in the Survey Site Description section.

The focus of NDOW's southwestern willow flycatcher survey and monitoring efforts are to:

- coordinate with other agencies to identify and survey all potential breeding habitat;
- conduct presence/absence surveys at selected sites monitored by NDOW since 1999;
- conduct nest searches and monitor nests to document nest success and productivity;
- provide a general site description for each survey area, including characterization of habitat attributes and vegetation measurements for each nest site;
- coordinate with SWCA to color band adult and fledgling willow flycatchers to enhance their long-term study of willow flycatcher movements.

METHODS

Surveys

The standard survey protocol for the southwestern willow flycatcher established by the FWS was adapted from Sogge *et al*. (1997), with FWS revisions. A minimum of one tape-playback survey visit was conducted during each of three defined periods consisting of 15 May to 31 May, 1 June to 21 June, and 22 June to 17 July. When possible, two or more additional surveys were conducted during the last survey period. These additional surveys enhance the ability to detect flycatchers once breeding is underway and provide additional verification that the flycatchers in question are resident birds. Survey visits were separated by at least five days, and were conducted from one hour prior to sunrise to 10 am. Electronic willow flycatcher songs (fitz-bew) and calls were broadcast within appropriate habitat and at intervals of 30-40 m. Following each broadcast, 1-2 minutes were spent listening for responses before moving to the next broadcast location. Once a territorial willow flycatcher was detected, nest search and/or nest monitoring was initiated. Survey data were recorded on standardized datasheets and all survey and nest monitoring data were entered into the NDOW Southwestern Willow Flycatcher database.

Although the various subspecies of willow flycatcher occupy distinct breeding ranges, they are extremely difficult to distinguish by sight and sound, having similar songs and only subtle differences in color and morphology. This is problematic in terms of identifying breeding resident southwestern willow flycatchers on territories; they may be confused with migrating, singing individuals of the northern subspecies as they pass through Nevada during their migration. Therefore, willow flycatchers detected on the local breeding range between 15 June and 20 July, or birds observed outside of these dates, yet positively associated with nesting activities or nests found, were presumed to be resident southwestern willow flycatchers. Birds observed at the beginning of this time period, but not observed during subsequent site visits, or birds observed after 25 July, were considered migrants.

Nest Monitoring

Once resident territorial willow flycatchers were documented, nest searches and nest monitoring were initiated, following the Southwestern Willow Flycatcher Nest Monitoring Protocol (Rourke et al. 1999), a modification of the Breeding Biology Research and Monitoring Database (BBIRD) field protocol (Martin et al. 1997). Nests were located by systematically searching each area and/or observing adults returning to nests. Once evidence of nesting activity was documented, the number of visits was increased and each nest was monitored throughout the remaining breeding season to more accurately document details of the entire nesting attempt. Data recorded included clutch size, nestlings produced, number of fledglings, or nest failure. A mirror pole was used to determine nest contents during the nest monitoring period.

According to the nest monitoring protocol, a nest could have been considered successful if one of the following four conditions was met: 1) one or more young confirmed visually fledging from the nest or located near the nest; 2) adult willow flycatchers seen feeding fledglings; 3) parents behaved as if dependent young were nearby (defensive behavior and/or adults agitated) when the nest was empty; or 4) nestlings observed in the nest within two days of the estimated fledge date (based on the assumption of fledging at 10 days). The nest monitoring protocol indicates that meeting one of the first two conditions is preferable and recommends any necessary follow-up surveys to visually confirm fledglings. In addition, for the purposes of this report, only fledglings actually observed were counted towards the total young fledged from each nest, resulting in a conservative estimate (Koronkiewicz et. al. 2006). Simple nest success was calculated using the ratio of successful nests to total nests observed.

Nest failure was assumed if any of the following was documented: 1) nest was abandoned prior to egg laying (abandoned); 2) nest was deserted with eggs remaining (deserted); 3) nest fledged no flycatcher young but contained cowbird eggs or young (parasitized); 4) nest was found empty or destroyed more than two days prior to the estimated fledge date (depredated); 5) nest was destroyed due to weather (weather); or 6) entire clutch was incubated unsuccessfully for more than 20 days (infertile).

Presence and number of brown-headed cowbirds was also recorded for each survey visit. No cowbird trapping effort was conducted in 2009.

Color Banding and Resighting

NDOW sometimes assists SWCA in banding birds at Key Pittman WMA as part of SWCA's on-going study of flycatcher movements and life history. Adult and fledgling willow flycatchers are captured in mist nests, using an active targeted approach by luring the birds into the nets via broadcasting conspecific vocalizations, or by a passive approach without acoustic broadcasts. Nestlings (8-10 days old) were banded only if removal/replacement of the nestling would not endanger the nest, nest plant or nestlings. Once in hand the birds were measured, sexed, aged

and banded. Adults received a colored, numbered U.S. federal aluminum band on one leg and a unique color combination on the other leg. Nestlings and fledglings were banded with a colored, numbered federal band and a non-unique additional band on the other leg. In this way, returning birds could be identified as having fledged a previous year. If observed in subsequent years, these birds were then recaptured as adults and re-banded with a unique combination. Methods for observing re-sighted banded birds (banded in a previous year) and recording data followed the SWCA Southwestern Willow Flycatcher Resight Protocol (SWCA unpubl.).

Habitat and Vegetation Characteristics

Habitat characteristics and vegetation components were identified and/or measured and recorded on standardized forms (Appendix B) for each survey site. Variables recorded included average canopy height, percent canopy cover, presence of surface water or saturated soil, distance to water, nest height, and vegetation species associated with nest location. Additionally, predominant vegetation was categorized into four general habitat types:

1. monotypic high-elevation willow -- entirely or almost entirely native broadleaf plants including high elevation willow
2. native broadleaf dominant -- mixed native and exotic plants (mostly native)
3. mixed native exotic -- mixed exotic and native plants (mostly exotic)
4. monotypic exotic – entirely or almost entirely exotic/introduced plants

SURVEY SITE DESCRIPTIONS

Seven sites within five geographic areas were surveyed for southwestern willow flycatchers by NDOW in 2009. A brief summary of each willow flycatcher site follows. Additional information, including geographic coordinates and elevations, can be found in Table 1 (All tables can be found in Appendix A). A Trimble GeoExplorer 3 handheld global positioning system (GPS) was used to map each site or transect using UTM coordinates for the start and stop points of each linear transect. Polygonal survey area boundaries were estimated based on coordinates collected in the field and digital orthoquad (DOQ) aerial photos.

Ash Meadows Area

Bradford Spring

This native broadleaf site consists of a patch of coyote willows (*Salix exigua*) adjacent to Bradford Spring, with a cattail (*Typha sp*) marsh adjacent to the willow patch. The spring and outflow stream was located near the west side of the patch. The central area and path into the patch was mostly flooded throughout the season in previous survey years; however, in 2008 and 2009 the central area and path were completely dry. This site has been consistently surveyed for willow flycatchers since 1999, with the exception of 2003-2004.

Forrest Spring

This mixed native and exotic site is part of the original Ash Meadows-Point of Rocks site initiated in 1999, and is located west of Point of Rocks Spring. A portion of the transect consists of dense screwbean mesquite *(Prosopis pubescens)* along with tamarisk (*Tamarix chinensis*) and an understory of Russian knapweed (*Centaurea repens*). The transect intersects Forrest Spring and proceeds southwest through patches of wild grape and coyote willow, and a cattail and bulrush (*Scirpus sp*) marsh. Another transect follows the major vegetation northwest of Forrest Spring and continues south to a patch of coyote willow. This site has been consistently surveyed for willow flycatchers since 1999, with the exception of 2003-2004.

Horseshoe-South

This native broadleaf site is located just west of Crystal Reservoir and consists of a very dense patch of coyote willow and adjacent cattail. In 2008 this site was identified by BIO-WEST

consulting firm as potential willow flycatcher habitat and first surveyed by BIO-WEST and NDOW in 2008.

Desert National Wildlife Range Area

Corn Creek

This mixed native and exotic site is located approximately 20 miles northwest of Las Vegas within the U.S. Fish and Wildlife Service Desert National Wildlife Range. The habitat includes three spring/stream fed ponds surrounded by marsh reed (*Phragmites sp*) and cattail. Several species of trees, both native and introduced, dominate the area, including cottonwood, black willow, honey mesquite, Russian olive (*Eleagnus angustifolia*), elm, black locust (*Robinia pseudoacacia*) and fruiting mulberry (*Morus alba*). Several species of fruit trees, including apple, apricot, and pecan are also present. A horse and mule pasture is adjacent to the forested area to the southeast. This site has been consistently surveyed for willow flycatchers since 2004.

Pahranagat Valley Area

Key Pittman

This native broadleaf site is located on the Key Pittman Wildlife Management Area in Pahranagat Valley adjacent to Highway 318. The site consists of 12 coyote willow patches located on the western shore of Nesbitt Lake. Water levels were lower in 2008-09 compared to previous years and willow patch inundation was also reduced. Beginning in 2004, cattle were allowed to graze on the management area from early July through the end of the survey season in August. A fencing project was completed in 2008 to prevent the cattle from accessing the willow patches. This site has been consistently surveyed since 1999.

Meadow Valley Wash Area

Meadow Valley Wash—Rainbow Canyon

This mixed native and exotic survey transect is located along portions of State Route 317. This new survey site in 2009 consists of several patches of coyote willow, galleries of cottonwoods and black willow and a riparian corridor along the wash with water supplied primarily from springs. Although the willow patches are still relatively small, NDOW and the USFWS agree that this site has potential as it matures and may be used by birds in the future.

Moapa Valley Area

Warm Springs Natural Area

This site was formerly considered two sites: Warm Springs Ranch and Pump Station, but was combined into one site beginning in 2008. The mixed native and exotic site is on private property currently owned by the Southern Nevada Water Authority (SNWA), located nine miles north of the town of Glendale. SNWA currently refers to this property as the Warm Springs Natural Area. Three survey transects were established north and south of the river and in the old Pump Station area. Considerable water and dense vegetation including tamarisk, mesquite, willow, ash, cottonwood, arroweed (*Pluchea sp*) and palms (*Washingtonia spp.*) occupy the area. The wetland vegetation is primarily cattail, sedge and bulrush, surrounded by a wet meadow. This site has been consistently surveyed for willow flycatchers since 2000.

Other Sites not surveyed

Two sites at Ash Meadows National Wildlife Refuge, Carson Slough and Longstreet Spring, that had been historically surveyed were re-evaluated and determined that they currently did not met willow flycatcher habitat criteria and therefore were not surveyed in 2008 or 2009. Additionally, sites in Oasis Valley, Crystal Springs and Beaver Dam were not surveyed in 2009 due to lack of

prior detections and limited personnel time and mileage. These sites will be re-evaluated in the future and surveys will resume if habitat conditions warrant.

RESULTS

Survey Efforts and Detections

Five geographic areas were surveyed for willow flycatchers by the Nevada Department of Wildlife in 2009 along with several private consultants. Over 140 hours were spent surveying and monitoring the sites encompassing nearly 15 linear kilometers (Table 2). During the 2009 survey season, a total of 27 adult resident flycatchers were detected at three sites. The total was comprised of 12 pairs and three single flycatchers. Occupied breeding areas included the Moapa Valley–Warm Springs Natural Area and Pahranagat Valley-Key Pittman Wildlife Management Area.

Four migrant/non-resident willow flycatchers were recorded in 2009. At Ash Meadows-Forrest Spring, two migrants were observed, and single migrants were detected, one time each, at Corn Creek and the Warms Springs Natural Area.

Nest Monitoring

Twenty-three fledglings were positively documented at the breeding areas in 2009, with 20 occurring at Key Pittman and three at the Warm Springs Natural Area. Only eight nests were located in 2009, all at Key Pittman. Not all nests were located, as evidenced by presence of fledglings later in the season on different territories lacking a detected nest. All eight located nests were determined to contain willow flycatcher eggs and were used in calculating simple nest success and productivity. Six of the located nests successfully fledged young resulting in a simple nest success rate of 75%. At least 31 eggs were laid, based on eggs observed and/or observed fledglings; however, the actual number of eggs may have been higher than observed due to possible predation between nest monitoring visits. Of the 31 known eggs, 23 known fledglings were produced for a fledgling success rate of 74%, based on available data. Average clutch size in 2009 (based only on located nests with at least one egg, n=8) was 3.8 eggs/nest, and average number of fledglings produced was 2.9 young/nest. Two of the eight actual located nests resulted in nest failure; both appeared to have been depredated. Although brown-headed cowbirds were detected at all sites surveyed in 2009, no incidents of parasitism were documented.

Color Banding and Resighting

SWCA personnel mist netted and banded three nestlings at Pahranagat Valley-Key Pittman in 2009. Details of these banding activities will be available in the 2009 SWCA report. Additional NDOW attempts to re-sight banded birds were made at Pahranagat Valley-Key Pittman patches and the Warm Springs Natural Area; however, observability was difficult as the birds moved quickly and frequently hid behind vegetation from the surveyor. As a result, usually only one leg was observed at a time and confidence was low for all of the observations, therefore they are not presented here.

Habitat and Vegetation Characteristics

Predominant vegetation at all the survey sites did not change in 2009. All sites where nesting occurred were classified as native broadleaf plants (monotypic high-elevation willow). Habitat measurements for all nest sites were combined for an average of 3.1 m for nest height (range 1.2 m to 5.1 m) and 5.4 m for overall canopy height for all nest sites. Percent canopy cover averaged 95% in 2009. The means stated above are only for areas where nesting occurred.

All known nests (100%) were constructed in coyote willow in 2009. Surface water was present during all or part of the breeding season at Key Pittman and Warm Springs Natural Area. Ash Meadows-Bradford Spring and Forrest Spring sites were not inundated for the second year in a row.

DISCUSSION

Survey Efforts, Detections, and Nest Monitoring

Some changes were implemented in 2009 resulting in discontinuing surveys at some locations, and adding new surveys at others. Historically 20 different sites have been surveyed for willow flycatchers, although not all necessarily have been surveyed each year (Table 3). Some of the sites that have never had a documented resident willow flycatcher continue to be monitored due to past detections of migrant willow flycatchers, presence of suitable habitat, and/or simultaneous monitoring for yellow-billed cuckoos (*Coccyzus americanus*). This strategy paid off in 2008 when a single migrant was detected for the first time at Moapa Valley-Pump Station, which is now combined with and known as Moapa Valley-Warm Springs Natural Area. By conducting more intensive surveys at this site in 2009, confirmed breeding and successful fledging of young was documented. Two sites, Clover Creek and Ash Meadows-Crystal Reservoir, were only surveyed one or two seasons and then were deemed to consist of unsuitable habitat and therefore surveys were discontinued. Others were located on private land where access is no longer granted (Pahranagat Valley-Crystal South, Meadow Valley Wash USFWS 2a-e and 5a-c). Due to lack of recent detections and private property issues, Oasis Valley and Beaver Dam were not surveyed in 2009.

Beginning in 2008, the FWS initiated in-depth studies of Ash Meadows National Wildlife Refuge in order to better understand existing conditions, initiate refuge-wide rehabilitation to restore natural conditions, and anticipate the effects of the restoration activities. As a result, the consulting firm BIO-WEST was contracted to conduct various bird surveys including surveys for willow flycatchers. Since NDOW has been historically monitoring these sites, NDOW assisted with and participated in the surveys conducted in 2008 and 2009. Despite having been surveyed in recent years by NDOW, Longstreet Spring site was discontinued due to lack of previous detections and marginal habitat. Similarly, Carson Slough was re-evaluated and surveys were discontinued as well. Historically, breeding willow flycatchers utilized this site; however, following the 2004 fire at Ash Meadows Carson Slough, no willow flycatchers had been documented along the newly established transects adjacent to the fire area during 2005, 2006 or 2007, although three migrants were detected in 2007. While the habitat since the fire has been improving annually, it may be a number of years before the Carson Slough area can once again support breeding flycatchers. There had been renewed activity detected at both nearby Forrest and Bradford Springs, following a period of inactivity and non-survey, however, in 2009 these site were dry due to water diversion issues. A GIS analysis conducted by BIO-WEST identified additional areas that may be suitable for willow flycatchers and these sites were surveyed by BIO-WEST and NDOW (when available) in 2008 and 2009. Despite breeding activity at the Horseshoe-South site in 2008 (ultimately the site failed), no further breeding was documented at Ash Meadows in 2009. Additional information regarding these surveys is available through BIO-WEST.

Pahranagat Valley-Key Pittman continues to be the most consistent and productive site monitored by NDOW. Similar suitable habitat located just south of this site, on the Pahranagat National Wildlife Refuge, which was surveyed and monitored by SWCA also has consistently reported relatively high numbers of flycatchers and high productivity in recent years (McLeod and Koronkiewicz et al. 2005, 2006, 2007).

The 2009 survey nest monitoring results for willow flycatchers conducted by NDOW showed a decrease in bird activity on most fronts, including number of adults, pairs, nests, and eggs. However, some of this change may be attributed to a change in personnel in 2009. Prior to this year, these surveys had been conducted by the same person since 2000. Surveying the same sites for that many years can result in an intimate knowledge of the area and bird activity. Although all bird surveyors have birding experience and attend required training, there still will be biases in observer ability, and lack of extensive detailed area knowledge and experience may have resulted in slightly reduced results.

Nest Monitoring

Nesting was documented at only two survey sites in 2009 (Key Pittman and Warm Springs Natural Area). The combined 75% simple nest success rate reported in the results section is in between the 50% and 83% rates reported in 2008 and 2007, respectively, but higher than the 25% observed in 2005. Nesting territories at Key Pittman in 2008 were found in similar areas as in previous years, although nest placement varied within those territories. This is typical as studies have shown that flycatchers appear to exhibit site/territory fidelity but not nest fidelity. Nest placement within certain habitat is predictable for certain bird species based on vegetation distribution (Arizona Game & Fish Department 1999).

Obstacles affecting successful reproduction such as predation and nest abandonment continue to be documented. The source of predation was not positively determined for any of the occurrences in 2009. Suspected predators of willow flycatcher eggs and nestlings include gopher snake, common kingsnake, Cooper's hawk, red-tailed hawk, great horned owl, western screech-owl, yellow-breasted chat and Argentine ants, as well as other snakes, lizards, chipmunks, weasels, raccoons, ring-tailed cats, foxes and domestic cats (USFWS 2002). In a report by the Arizona Game and Fish Department (1999), brown-headed cowbirds were observed to be nest predators, ejecting eggs or nestlings without depositing their own eggs. Thus, while brood parasitism may not occur, cowbirds may still be accountable for nest failure by predation.

Parasitism by cowbirds had been documented every year since 1999, with the exception of 2001. In recent years, known cowbird parasitism has remained relatively low, although nest predation/abandonment has increased slightly. In 2009 there were no confirmed incidents of cowbird parasitism.

Color Banding and Resighting

Although color banding is not routinely conducted at all sites surveyed by NDOW each year, NDOW personnel have assisted SWCA with color banding activities at NDOW sites as requested. Color banding and resight data enhances our knowledge of life history parameters such as annual survivorship of adults and young, site fidelity, seasonal and between-year movements and population structure (McLeod et al. 2005). Although recent confidence levels have been low for resighted banded birds at all sites, capture and re-banding of young birds have shown an influx of birds originally banded at Pahranagat NWR, moving to and nesting at Key Pittman WMA (Koronkiewicz pers comm.)

Habitat and Vegetation Characteristics

Canopy cover densities for nests found in 2009 fell within the known established range of 50-100%. Average nest height in 2009 is also comparable, and within the range of 2-7 m reported in the Recovery Plan (2002). The 2009 results for nest height, canopy height and canopy cover are all similar to NDOW results from previous years, and comparable to results of other willow flycatcher monitoring efforts. Nest distance from water varied among sites and across the last

few years; however, most sites were within the expected distance to water during critical time periods.

Based on information from the current study, it appears willow flycatchers utilizing the sites monitored by NDOW prefer dense patches of coyote willow for breeding habitat. This habitat type is easy to enhance, as the willows will quickly propagate given an adequate amount of water and protection of the saplings from grazing. For example, patches of coyote willow at Key Pittman have expanded to a size capable of supporting multiple nesting flycatchers, within a five-year time frame (Bart Tanner, NDOW, pers. comm.). In fact, NDOW has documented an increased number of flycatchers at Key Pittman in recent years, and historically some willow patches that were no more than one-tenth of an acre supported nesting willow flycatchers.

NDOW has been working with private landowners and federal partners to manage grazing at sites where willow flycatchers occur. At Key Pittman WMA, efforts have been made to reduce grazing pressures on willow flycatcher habitat while still accommodating management efforts designed to benefit waterfowl and upland game. In the mid 1990's cattle numbers were reduced from 100 to 75, and the season of grazing was reduced by two months, from 1 April thru 31 August to 30 June thru 31 August. This grazing regime had continued each year through 2009, with the exception of 2008 when no cattle were grazed during the willow flycatcher breeding season. A fencing project was completed at Key Pittman in 2008 to exclude cattle from the willow patches and ultimately reduce possible habitat destruction due to grazing. NDOW has continuously monitored flycatcher nesting status at this site since 1999, and during this period NDOW has documented an expansion of the willow habitat as well as increasing number of flycatchers, nesting pairs, and number of nests.

MANAGEMENT RECOMMEDATIONS

Based on the results of recent coordinated southwestern willow flycatcher surveys and nest monitoring in Nevada and surrounding states, and in consultation with the Nevada Department of Wildlife's Wildlife Action Plan (2006), the following recommendations are put forth:

1. Continue to conduct surveys and nest monitoring at known breeding sites to assess life history parameters such as nest success, productivity, nest parasitism and depredation, as well as possible habitat loss or impacts. Investigate and locate new previously unknown territories in suitable habitat, or potential habitat. The results from these and other survey efforts in other states will contribute to achieving downlisting and delisting goals and objectives put forth in the Southwestern Willow Flycatcher Recovery Plan (2002).

2. Continue to maintain federal and state cooperation and collaborative funding for continued statewide surveys in Nevada.

3. Continue to develop new and cultivate existing partnerships with private landowners to identify and monitor willow flycatcher breeding territories on private lands. Encourage participation in Conservation Easements, Safe Harbor Agreements and Landowner Incentive Programs.

4. Continue to manage for willow flycatchers on state and federal lands and reduce the effects of potentially harmful land use practices that may impact breeding habitats, including improper grazing, water diversion, and destruction of willow patches and other riparian habitats.

5. Encourage landowners to apply livestock grazing prescriptions in balance with the ability of the native riparian vegetation to regenerate and maintain itself.

6. Promote native habitat restoration while avoiding impacts to existing nest territories that may occur in invasive salt cedar, allowing for natural transitioning of nesting pairs from exotic to natural vegetation.

7. Pursue conservation protection for designated critical southwestern willow flycatcher habitat in Nevada.

8. Continue monitoring brown-headed cowbird numbers and incidents of parasitism at survey areas to determine if future cowbird trapping and removal efforts are warranted.

Yellow-billed Cuckoo

INTRODUCTION AND BACKGROUND

The yellow-billed cuckoo (*Coccyzus americanus*) (cuckoo) is a medium sized neotropical migrant that historically bred in lowland riparian habitats throughout most of western North America from British Columbia to Mexico, as well as in most of the eastern United States (Hughes 1999). The range of the western subspecies (C. a. occidentalis) has significantly contracted in recent decades, and now only breeds in isolated areas in Idaho, California, Utah, Arizona, and Nevada (Figure 2). The cuckoo winters primarily in South America.

Yellow-billed cuckoos are very secretive birds and have unique reproductive characteristics involving a very rapid breeding cycle. Generally, cuckoos arrive at their breeding grounds late in the season and both adults quickly build a stick nest in a tree or large shrub. Eggs are laid (usually 2-3) and both adults share incubation duties that last 9-11 days, followed by the young fledging approximately 7-9 days after hatching. Typically, the average time required for egg laying to fledging is 17 days. The altricial young are usually fully feathered within two hours of hatching (Hughes 1999). Cuckoos have also been known to participate in communal nesting behavior and are sometimes assisted by apparently unrelated helper males that can supply the young with up to 40 percent of their food, allowing the dominant pair to possibly raise a second brood. Adults and young depart for wintering grounds when the young are about 3-4 weeks old.

The cuckoo diet consists of mostly caterpillars, cicadas, grasshoppers and other potential crop-destroying insects. As a result, cuckoos may exhibit irruptive behavior by moving into areas where cicada outbreaks are underway, to capitalize on the available food source (Laymon 2001). Cuckoos usually time egg laying with outbreaks of insects to ensure an adequate food supply for them and their young.

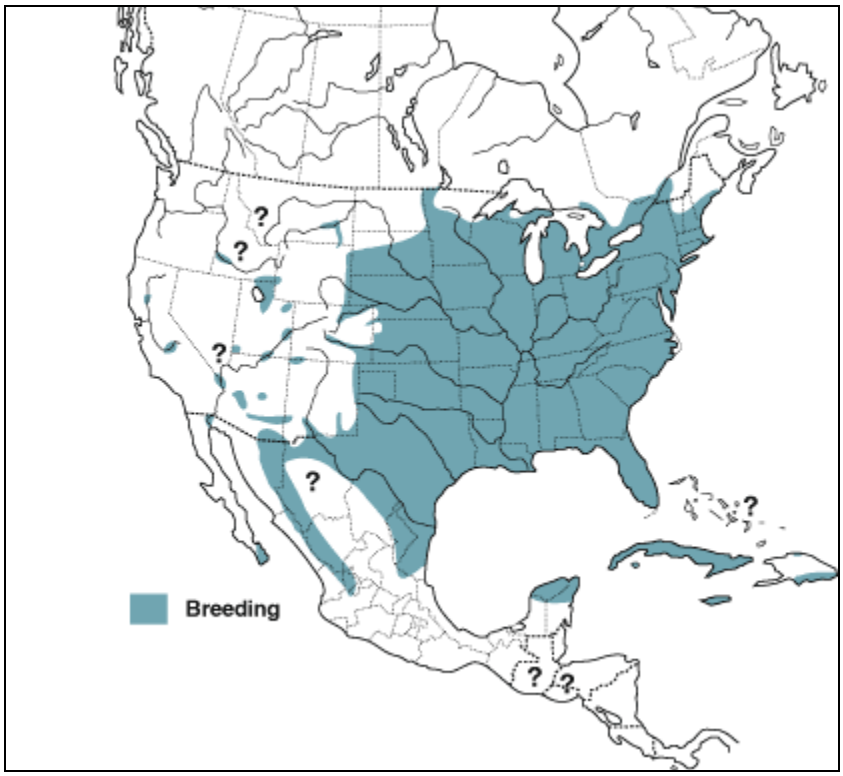

FIGURE 2. Breeding distribution of the Yellow-billed Cuckoo.
Source: Birds of North America, online 2006.

The cuckoo inhabits woodlands with clearings and dense shrub understory, usually associated with watercourses. Throughout the southwest during the breeding season, cuckoos seem to prefer desert riparian corridors consisting of cottonwood and dense mesquite thickets. Cuckoos utilize large home ranges, varying in size between 5 and 20 ha, however smaller than average home ranges have been observed in Nevada (Halterman 2002). In Nevada, the cuckoo has been documented in the western and southern portions of the state including: along the Carson River, Lahontan Valley and the Fallon area (Alcorn 1988); at Beaver Dam Wash, Pahranagat Valley and Meadow Valley Wash, and; along the Lower Virgin River, Las Vegas Valley, Corn Creek and Moapa Valley (Alcorn 1988, NDOW 2000-2007). The only known cuckoo nest records in Nevada are from Warm Springs Ranch in Moapa Valley in 2001 (NDOW 2000-2007).

The cuckoo has declined from much of its historic range in the western U.S. and southern British Columbia (Laymon and Halterman 1987). The early decline of the species in the west has been linked to pesticide use on both the breeding and wintering grounds as well as loss of riparian habitat in nesting areas as a consequence of fragmentation, inundation by reservoirs, channelization, and urban development (Gaines and Laymon 1984; Laymon and Halterman 1987). The cuckoo was petitioned for listing as an endangered species under the ESA in February of 1998 (Suckling et al. 1998). The U.S. Fish and Wildlife Service (USFWS) found the petition to be warranted, but precluded by higher priority listing actions. Consequently, the yellow-billed cuckoo was added to the candidate species list on 18 July, 2001 (USFWS 2001).

Breeding season surveys for cuckoos have been conducted by NDOW, other agencies and private consultants at various sites to determine distribution and breeding status of cuckoos in suitable riparian areas of Southern Nevada. NDOW personnel have conducted these surveys since 2000, and other cooperators conducting similar surveys included San Bernardino County Museum, Stephen W. Caruthers Associates (SWCA), Southern Sierra Research Center and others. This report only represents data generated and collected by NDOW personnel at selected survey sites, which are listed and described below in the Survey Site Description section.

METHODS

Surveys

Yellow-billed cuckoo survey protocols were adapted from methods developed by Halterman *et. al.* (2002), with revisions in 2005. Surveys consisted of walking along suitable habitat, stopping every 100m and playing a recording of cuckoo calls, followed by listening for a response. Yellow-billed cuckoo "*kowlp*" calls were broadcast acoustically via handheld MP3 player and mini amplified speaker. The speaker or other playback equipment must be capable of projecting undistorted sound at least 100 m. Upon arriving at each call station the surveyor remained quiet for 1-2 minutes to acclimate to surrounding noises and listen for incidental spontaneous cuckoo calls. The contact call was then played once, followed by 1-2 minutes of listening, and then the process was repeated four more times for a total of a minimum of five playbacks per station before advancing 100m to the next call station. Habitat patches 200m in width or larger would require additional transects to adequately cover the entire area. Although the cuckoo repertoire consists of several calls and songs including the "*kowlp*", "*buzz*", "*knocker*" and "*coo*" calls, only the "*kowlp*" was used for breeding surveys and never the "*coo"* call since it was previously believed that only unmated males coo and that this may suppress responses of possible nearby mated cuckoos. Once a bird was detected, broadcasts were discontinued to avoid harassment, which may negatively affect nest success.

Each transect was to be surveyed a minimum of three times between 15 June and late August. Five surveys are recommended, if time allows. Each site visit was ideally separated by 10-14 days in order to ensure survey coverage during the different breeding/nesting cycle stages. Surveys were conducted between sunrise and 1200 hours and were discontinued if the ambient air temperature rose above 100° F, winds exceeded eight mph or loud rainy conditions existed. Survey data were recorded on standardized datasheets and all survey and nest monitoring data were entered into the NDOW yellow-billed cuckoo database.

Typically, cuckoos present during broadcast surveys will respond in one of three ways: 1) the bird may quietly fly in towards the broadcast location and then vocalize as it gets closer to the observer; 2) the bird may fly in without any vocalizations, or; 3) the bird may respond with a vocalization from a distance without flying in. Information regarding breeding status can sometimes be determined by a combination of behavior and vocalizations. Currently, it is believed that a bird that flies in and then vocalizes with the "coo*"* call or is very interested in the broadcast recording is usually an unmated bird. Occasionally constantly cooing unmated males may follow the surveyor for long distances necessitating early termination of the survey. A bird that responds with any other call, does not fly in or does not respond further, might be either mated or breeding status is unknown (Halterman *et al* 2002, and 2007*)*. Differentiating the sex of cuckoos is extremely difficult and methods for determining male and female cuckoos are currently being developed by experts (Halterman pers. comm.). Detailed field notes on calls and behaviors of each bird detected were recorded. Beginning in 2006, for the purpose of this report, numbers of cuckoo detections were reported instead of number of birds, due to the difficulty associated with determining exact numbers of birds due to their secretive nature.

Nest Finding/Monitoring

Once cuckoos suspected to be mated were detected via specific calls and behaviors, an attempt was made to locate and monitor any possible nests. Locating nests by searching and observing is easiest during the nest building process; however, this should be performed only by experienced, trained personnel to avoid possible nest abandonment. If the surveyor is patient and discreet, nests may be located by observing adults returning to the nest to feed young. Once located, active nests should only be approached or checked while the adults are absent from the area.

Habitat and Vegetation

Habitat characteristics and vegetation components were identified and/or measured and recorded on standardized forms (Appendix C) for each survey site, including; average canopy height, percent canopy cover, and distance to water. Additionally, predominant vegetation was categorized into four general habitat types:

1) monotypic willow and/or cottonwood- entirely or almost entirely native broadleaf plants including willow and cottonwood
2) native broadleaf dominant - mixed native and exotic plants (mostly native)
3) mixed native exotic - mixed exotic and native plants (mostly exotic)
4) monotypic exotic – entirely or almost entirely exotic/introduced plants

SURVEY SITE DESCRIPTIONS

Four geographic areas were surveyed for yellow-billed cuckoos by NDOW in 2009. A brief summary of each yellow-billed cuckoo site follows. Additional information, including geographic coordinates and elevations, can be found in Table 1. A Trimble GeoExplorer 3 handheld global positioning system (GPS) was used to map each site or transect using UTM coordinates for the start and stop points of each linear transect. Polygonal survey area boundaries were estimated based on coordinates collected in the field and digital orthoquad (DOQ) aerial photos.

Desert National Wildlife Range Area

Corn Creek

This mixed native and exotic site is located approximately 20 miles northwest of Las Vegas within the U.S. Fish and Wildlife Service Desert National Wildlife Range. The habitat includes three spring/stream fed ponds surrounded by marsh reed (*Phragmites sp*) and cattail. Several species of trees, both native and introduced, dominate the area, including cottonwood, black willow, honey mesquite, Russian olive (*Eleagnus angustifolia*), elm, black locust (*Robinia pseudoacacia*) and fruiting mulberry (*Morus alba*). Several species of fruit trees, including apple, apricot, and pecan are also present. A horse and mule pasture is adjacent to the forested area to the southeast. This site has been consistently surveyed for cuckoos since 2003.

Moapa Valley Area

Warm Springs Natural Area

This site was formerly considered two sites: Warm Springs Ranch and Pump Station, but was combined into one site beginning in 2008. The mixed native and exotic site is on private property currently owned by the Southern Nevada Water Authority (SNWA), located nine miles north of the town of Glendale, on Warm Springs Road near State Route 168. SNWA currently refers to this property as the Warm Springs Natural Area. Survey transects were established along two waterways, including a drainage area to the west and the Muddy River to the east. Considerable water and dense vegetation including tamarisk, mesquite, willow, ash, cottonwood, arroweed (*Pluchea sp*) and palms (*Washingtonia spp.*) occupy the area. The wetland vegetation is primarily cattail, sedge and bulrush, surrounded by a wet meadow. This site has been consistently surveyed for cuckoos since 2000.

Meadow Valley Wash Area

Meadow Valley Wash- Mile 37, 42-44

This mixed native and exotic survey transect is located along State Route 317 starting with a point survey at Mile 37 near Elgin, Nevada, where a cuckoo was first observed in 2001. The survey continues at mile marker 42 and proceeds north to a location where a railroad bridge crosses over the paved road near mile 44. Habitat consists of a few patches of coyote willow galleries of cottonwoods and black willow, and a riparian corridor along the wash with water supplied primarily from springs. A major flood event destroyed the Mile 39-40 transect in January 2005 except for a small stand of trees at Mile 40. The Mile 42-44 transect was also damaged; however, five or six stands of trees are possibly still suitable for cuckoos. In July 2005 a lightning-caused wildfire occurred along Kane Springs Road and impacted a small portion of the Mile 37 point survey area. This site is only surveyed for cuckoos and portions of this transect have been consistently surveyed since 2000, with the exception of the 2002-2003.

Meadow Valley Wash – Mile 48-56

A one-time survey was conducted at this site initially in 2001. Due to the damage to transect Mile 39-40 and 42-44 caused by the floodwaters in January 2005, miles 48-56 were re-surveyed to re-evaluate habitat suitability for yellow-billed cuckoo use. Five locations were chosen throughout this stretch where Meadow Valley Wash flows adjacent to the road and suitable mixed native and exotic vegetation occurs. Location 1 at Mile 48 is approximately 120 m long and consists of a railroad tressel, ranch with a small peach orchard and cottonwoods occurring throughout the area. Location 2 is a point survey at Mile 50 near a gallery of cottonwoods. Location 3 includes the Longhorn Cattle Company ranch and associated cottonwood and ash trees. Pastures are located on either side of the road, and periodically contain cattle. Horses were always present in pastures at or near the ranch houses. Location 4 was the “45 mph”

zone, which includes Mile 55 and consists of cottonwoods and black willow. Location 5 includes the Rainbow Canyon Ranch near Mile 56. Pasture exists along this entire location and the area consists of cottonwood, black willow, elm, and some scattered Russian olive. The suitable habitat occurs on private property and all the surveys were conducted from the road. Most of the available habitat occurs close enough to the road to surveyed adequately, with a few exceptions. This site is only surveyed for cuckoos and portions of this transect have been consistently surveyed since 2005.

Clover Creek

Clover Creek

This mixed native and exotic survey transect is located in Clover Creek canyon east of the town of Caliente, NV. This site is privately owned by residents, Union Pacific Railroad, and others. The survey transect is approximately 4.6 km in length with available habitat mostly on the north side of the road. Habitat includes patches of mature cottonwood and ash. Prior to 2009, this site was surveyed one time in the late 1990's.

Other Sites not surveyed

Several sites, including Oasis Valley, Crystal Spring, and Beaver Dam, that had been surveyed for cuckoos in previous years were not monitored in 2009 due to lack of prior detections and limited personnel time and mileage. These sites will be re-evaluated in the future and surveys will resume if habitat conditions warrant. Crystal—South and Pahranagat Valley North—River Ranch are located on private property and access has not been granted since 2002 and 2001 respectively.

RESULTS

Survey Efforts and Detections

Over 50 hours were spent surveying various sites for cuckoos by NDOW in 2009, resulting in no cuckoo detections by NDOW (Table 4). Two non-NDOW detections were made at the Warm Springs Natural Area; on 6/27 there was a single audible detection, and on 7/29 a single bird was observed silently flying overhead. The detections at this site were made by an experienced birder who has previously assisted with coordinated surveys by NDOW on behalf of the Southern Nevada Water Authority, the current owner of the Warm Springs Ranch/Natural Area property. Additional cuckoo survey efforts in suitable habitat were conducted by various other consultants and agencies in Nevada in 2009. The Southern Sierra Research Station (SSRS) was contracted by the Bureau of Reclamation (BOR) to survey areas in the Lower Colorado River Watershed, including Pahranagat NWR and Overton WMA. In 2009 they recorded one detection each at Pahranagat North and Key Pittman. At least three additional cuckoo detections were made by Bruce Lund at Overton WMA Wilson Pond area. Staff and contractors at Ash Meadows National Wildlife Refuge recorded two cuckoo detections in 2009.

Nest Finding and Monitoring

No cuckoo nests were located or confirmed during surveys conducted in 2009 by NDOW and other consultants.

Habitat and Vegetation Characteristics

Predominant vegetation at all of the sites surveyed for cuckoos consisted of cottonwood, black willow, mesquite, ash, tamarisk and palms, and all the sites were classified as mixed native and exotic plants (mostly native). Common to all the sites were cottonwood trees and nearby water sources. Average combined canopy height for all the sites was 23 m. Presence of livestock or recent sign was only observed at Meadow Valley Wash-Mi 48-56; however horses and/or burros were observed at Corn Creek.

DISCUSSION

Survey Effort and Detections

Fewer sites were surveyed in 2009, compared to recent years due to the temporarily discontinuing some sites due to lack of historic detections and limited personnel time. Historically 14 different sites have been surveyed for cuckoos, although not all necessarily have been surveyed each year (Table 5). In years previous to 2006, cuckoo survey results were reported as the number of birds detected and were further categorized as 'mated' or 'unmated' based on accepted interpretations of the ethology and vocalizations of the species at that time. Beginning in 2006, cuckoo survey results were presented as 'cuckoo detections' rather than attempting to enumerate exact numbers of birds. In addition, mated/unmated breeding status is no longer strictly applied based on behaviors and vocalizations, and if there is any doubt, breeding status is recorded as 'unknown'. These changes were made based on new information gleaned through recent yellow-billed cuckoo research (M. Halterman pers comm.). As a result of these changes, currently it is difficult to interpret trend and draw conclusions until several more years of data can be collected using these standards.

No cuckoo detections were made during standardized surveys by NDOW in 2009, no nests were located by any surveyors and breeding still has not been confirmed since 2001. A single repository of Nevada cuckoo data does not exist at this time due to surveys being conducted by multiple agencies and cooperator/consultants; however, all involved are using the same standardized methods and protocols, and survey effort in terms of numbers of surveys per site is similar. In general, cuckoo numbers/detections have varied spatially and temporally at sites monitored by NDOW and other sites monitoring by cooperators/consultants in southern Nevada since 2000. Temporal variation has been observed both annually and within survey seasons. For example, in 2007 and 2009 Overton WMA was surveyed on different days by two different agencies/cooperators, with one recording eight cuckoo detections throughout the entire survey season, while the other recorded no detections. Distributional variation has also been noticed in recent years whereby detections at Warm Springs were relatively down in 2007, but increased in 2008, while detections at nearby Overton WMA were up in 2007 and down in 2008 (Braden et al 2008, Johnson et al 2008, E. Rose pers comm.). Standardized surveys at Pahranagat NWR by other agencies during the past four years have resulted in only two detections, which occurred in 2006 and 2009.

In Nevada, detections continue to be intermittent and variable. It is currently unknown what may be causing this annual spatial and temporal variation. Cuckoos sometime exhibit irruptive breeding behaviors resulting in a localized influx of birds, usually in response to food availability and increased insect abundance. Local populations may be variable during these irruptive episodes which may explain some annual spatial variation. As with all species, especially secretive ones like the cuckoo, presence/absence surveys cannot confirm absence of the species, but rather may indicate a failure to detect. Studies have shown via surveys conducted at sites where the population is known that when following the three survey protocol 95% of the time at least one cuckoo will be detected, leaving a 5% chance of cuckoos being present at the site but not detected during the survey (Laymon 1998). Additionally, cuckoos appear to have a low fidelity to breeding sites, resulting in the possible absence of pairs on known breeding sites in some years, and presence of breeding birds on previously vacant sites in other years (Gaines and Laymon 1984), thus necessitating the need to survey all available habitat each year.

Notwithstanding issues and concerns regarding cuckoo detectability and the difficulties in determining historic and current abundance, this breeding bird has dramatically and precipitously declined throughout its range in the western states (Roberson 1980, Gaines and Laymon 1984, Laymon and Halterman 1987b, Huges 1999). Western populations have suffered

severe range contractions during the twentieth century, and are already extirpated as breeding birds from British Columbia, Washington, Oregon, and possibly Nevada, and appear to be hanging on only precariously in Idaho (Taylor 2000). In California, the cuckoo once numbered more than 15,000 pairs, but the population has been reduced to about 30 pairs in less than 100 years (Hughes 1999, Laymon and Halterman 1987). In 1976, Groschupf (1987) estimated the number of breeding pairs of cuckoos along the lower Colorado River to be 846. Between 1976 and 1986 other researchers (Rosenburg et al 1991) documented a 93% decline in cuckoos in the same area. In 2008 and other recent years, the highest numbers of cuckoo detections and confirmed breeding events have occurred in various river drainages in Arizona, with the highest concentrations at Bill Williams National Wildlife Refuge and San Pedro Riparian National Conservation Area (Halterman et al. 2007, Johnson et al. 2008).

The cuckoo remains a candidate species for listing under the ESA and the FWS considers the western populations to be a 'distinct population segment' (DPS). In Nevada the cuckoo is a state protected sensitive species and a species of conservation priority; in California the bird is state listed as endangered; it is considered a species of concern in Arizona, Colorado, Montana, and Idaho; a sensitive species in Oregon and Utah; and a state candidate species in Washington (Halterman et al. 2007). The western yellow-billed cuckoo is also a U.S. Forest Service sensitive species. Similar to other areas, in Arizona the cuckoo is considered a species of special concern due to extremely reduced populations and a general decline in all areas (AZGFD 2002). Although no one cause can be singled out in regard to the decline, habitat fragmentation and loss, and decreased habitat quality appear to be the leading threats facing the cuckoo in the West. Pesticide use may also be significant, as the result is a decrease in insects, which constitute the bird's major food source, however, this possible hypothesis warrants further research.

Nest Finding and Monitoring

Yellow-billed cuckoo nests are difficult to locate due to the elusive behavior of the birds, the dense habitat which they utilize, large home ranges (up to 100 acres if available) and their relatively short breeding season. Nest construction takes two to four days (Halterman, et. al. 2000), and with an average of only 17 days from egg laying to fledging of young, the window of opportunity for locating a nest is limited. In addition, cuckoos seemed to prefer nesting in the tops of canopies, they are so wary around the nest that if there is any intruder (i.e. surveyor) nearby, they are not likely to go near the nest, and nest abandonment is always a possibility. Studies have shown it takes a birder with cuckoo experience an average of 4-person days to locate a single nest (Laymon 1998). Despite these challenges Halterman (2001) stated that it is important to confirm breeding at southern Nevada sites, as cuckoos found in California and Arizona may utilize substantially different habitat types.

Habitat and Vegetation Characteristics

Habitat conditions and vegetation components did not significantly change at the surveyed sites in recent years. Habitat loss and degradation are often cited as potential contributing factors to cuckoo declines; however, since Nevada's available habitat has remained mostly unchanged, this should possibly be ruled out as a factor affecting presence of cuckoos in Nevada. A major flood event in 2005 impacted some habitat patches in Meadow Valley Wash; however, this area has never had consistent detections, even before the flood, and alternate nearby sites in the wash are still being evaluated for cuckoo use. Unfortunately, much of southern Nevada's riparian habitat is privately owned, and it has been difficult for biologists to acquire access to these areas in recent years, resulting in reduced ability to survey all suitable cuckoo habitat in Nevada.

Available patch size and quality may be influencing cuckoo use in Nevada. Laymon and Halterman (1989) found that in California, except on the lower Colorado River, a significant positive relationship existed between size of the habitat patch and the probability the patch was occupied by breeding cuckoos. This research led to a modified definition of suitable nesting habitat for Yellow-billed Cuckoos in California regarding dominant tree species, habitat width, and total habitat area. Cuckoos breed in large areas of riparian habitats and tend to have large home ranges, between 5-10 ha, and studies have shown survey areas should be at least 2 ha; this is the absolute minimum size for cuckoo occupancy (at least in Arizona and California) (Corman and Magill 2000, Halterman et al. 2001). Several of the survey sites in Nevada barely fit this requirement (i.e. Oasis Valley Area sites), while other sites, such as the Moapa Valley areas are larger (30-40 ha), but the riparian habitat is limited to narrow stringers of cottonwood no more than 40 m wide, and would be considered of 'poor quality' in California by Laymon and Halterman (1989).

Cattle and horses have grazed intermittently at the Moapa Valley site over the past years. In the winter of 2000, cattle and horses were removed from the area several months before the cuckoo breeding season and as a result the meadow grasses were 0.5-1.0 m high, and provided substantial habitat for grasshoppers, one primary prey source for cuckoos (Bent 1940). In the winter of 2001, cattle and horse grazing was reintroduced to the Moapa Valley sites and continued through the spring of 2007, and apparent grasshopper numbers declined. Coincidentally, the highest number of cuckoo detections ever recorded occurred during the 2001 surveys at this site (n=12). Grazing at this site has been eliminated since the land was purchased by the SNWA; however, impacts or benefits from this change have yet to be determined. Grazing at other sites consisted of cattle at various locations in Meadow Valley Wash, burros at Oasis Valley-South and horses at Corn Creek.

MANAGEMENT RECOMMENDATIONS

Based on the results of recent coordinated yellow-billed cuckoo surveys and nest monitoring in Nevada and surrounding states, and in consultation with the Nevada Department of Wildlife's Wildlife Action Plan (2006), the following recommendations are put forth:

1. Continue to conduct cuckoo surveys and nest monitoring at known breeding and previous detection sites to assess life history parameters such as nest success, productivity, as well as possible habitat loss or impacts. Continue to identify survey and monitor new areas of potential cuckoo breeding habitat. Special emphasis will be placed on locating additional potential habitat in Lincoln County and along the Carson River in 2008.

2. Continue to maintain federal and state cooperation and collaborative funding for continued statewide surveys in Nevada. With the cooperators, work toward producing a comprehensive annual report that summarizes the complete coordinated effort so that results are not reported piecemeal in various gray literature venues.

3. Continue to develop new and cultivate existing partnerships with private landowners to identify and monitor cuckoo breeding activities on private lands. Encourage participation in Conservation Easements, Safe Harbor Agreements and Landowner Incentive programs.

4. Continue to manage for cuckoos on state and federal lands and reduce the effects of potentially harmful land use practices that may impact breeding habitats, including; improper grazing, water diversion, and destruction of cottonwood stands and other

riparian habitats. Encourage landowners to apply livestock grazing prescriptions in balance with the ability of the native riparian vegetation to regenerate and maintain itself.

5. Pursue conservation protection for known cuckoo breeding habitat in Nevada. Large riparian corridors with tall stands of cottonwood, ash, and black willow along with dense understories need to be protected from any future loss, and management strategies intended to expand and replace suitable habitat should be implemented. Management strategies should include emphasis on both overstory and midstory vegetation layers in order to protect both nesting and foraging habitats.

6. Restore cottonwood overstory through sapling planting and the restoration of natural channel scouring processes in sites of appropriate potential.

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APPENDIX A

Report Tables

TABLE 1. Geographic area, site names and other geographic information for all southwestern willow flycatcher and yellow-billed cuckoo sites surveyed by NDOW in 2009.

Geographic Area	Site Name	Species Surveyed for	Township, Range & Sections	UTM Easting	UTM Northing	Elevation (Ft)
Ash Meadows NWR	Bradford Spring	SWFL	T18S R50E S11	562556	4028559	2,252
Ash Meadows NWR	Forrest Spring	SWFL	T18S R51E S7 & T18S R50E S12	564535	4028184	2,252
Ash Meadows NWR	Horseshoe South	SWFL	T18S R50E S4	558906	4029927	2,175
Desert NWR	Corn Creek	SWFL & YBCU	T17S R59E S34	647170	4033583	2,920
Pahranagat Valley	Key Pittman	SWFL	T4S R60E S23 & 27	656667	4158686	3,834
Moapa Valley	Warm Springs NA	SWFL & YBCU	T14S R65E S15 & 16	704520	4065220	1,750
Clover Creek	Clover Creek	YBCU	T4S R67E S8, 9, & 10	719797	4166576	4,756
Meadow Valley Wash	Mile 48-56	YBCU	T5S R66E S28 & 24 to T4S R66E S35	714350 716703	4150127 -- 4160765	3,855-4,300
Meadow Valley Wash	Mile 37 & 42-44	YBCU & SWFL	T7S R66E S1, T6S R66E S36 T6S R66E S14 & 23	718266 715487	4136101 -- 4145580	3,500

SWFL=Southwestern Willow Flycatcher
YBCU=Yellow-billed Cuckoo

TABLE 2. Resident Southwestern Willow Flycatcher summary for all sites surveyed by NDOW in 2009.

Geographic Area	Site Name	Survey Hours[1]	# of Adults/(Pairs)	# of Nesting Attempts	# of Eggs	# Fledged Young	# of Nesting Attempts w/ Eggs	Successful Nests
Ash Meadows	Bradford Spring	14.0	0	0	0	0	0	0
Ash Meadows	Forrest Spring	9	0	0	0	0	0	0
Ash Meadows	Horseshoe-South	9.6	0	0	0	0	0	0
Desert NWR	Corn Creek	4.42	0	0	0	0	0	0
Pahranagat Valley	Key Pittman	73.8	23 (11)	--	28	20	--	6
MVW-Rainbow Cyn	Rainbow Canyon	2.83	0	0	0	0	0	0
Moapa Valley	Warm Springs NA	29.6	4 (1)	--	3	3	--	1
	Total	*143.25*	*27 (12)*	--	*31*	*23*	--	*7*

1--Total hours includes nest monitoring

TABLE 3. Status of potential willow flycatcher sites historically monitored by NDOW, 1999-2009. X=surveys conducted, no willow flycatchers documented; R=resident willow flycatchers documented (does not denote success or failure); M=migrant willow flycatchers documented, but no residents; --=location not surveyed in that year.

Geographic Area	Site Name	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	09
Ash Meadows	Carson Slough	R	R	R	R	R	R	X[1]	X[1]	M	--	--
Ash Meadows	Bradford Spring	R	R	X	X	--	--	X	R	R	R	X
Ash Meadows	Forrest Spring[2]	R	X	M	X	--	--	R	R	X	X	M
Ash Meadows	Longstreet Spring	--	X	--	--	--	--	X	X	X	--	--
Ash Meadows	ACL[3]	X	--	--	M	--	--	--	--	--	X	--
Ash Meadows	Other BIO WEST[3]	--	--	--	--	--	--	--	--	--	X	X
Oasis Valley	South	X	X	X	X	X	X	M	X	X	X	--
Oasis Valley	Springdale	--	--	M	X	X	M	--[4]	--[4]	--[4]	--[4]	--
Desert NWR	Corn Creek	--	--	--	--	--	M	M	X	X	M	--
Beaver Dam SP	Beaver Dam	X	X	--	--	--	--	--	--	--	X	--
Pahranagat Valley	Key Pittman	R	R	R	R	R	R	R	R	R	R	R
Pahranagat Valley	River Ranch	R	R	R	--[4]	--[4]	--[4]	--[4]	--[4]	--[4]	--[4]	--
Pahranagat Valley	Crystal South	--	--	--	X	--	--	--	--	--	--	--
Pahranagat Valley	Crystal Springs	--	--	--	R	X	X	M	--	X	X	--
Meadow Valley Wash	Clover Creek	X	--	--	--	--	--	--	--	--	--	--
Meadow Valley Wash	12-14/USFWS[5]	--	X	--	M	--	--	X	X	--	--	--
Meadow Valley Wash	USFWS 2a-e	--	--	--	--	--	--	--	X	--	--	--
Meadow Valley Wash	USFWS 5a-c	--	--	--	--	--	--	--	X	--	--	--
Moapa Valley	Warm Springs NA	--	X	X	M	R	R	R	X	RM	R	R
Meadow Valley Wash	Rainbow Canyon	--	--	--	--	--	--	--	--	--	--	X

1—A fire destroyed the historic sites in 2004 resulting in new transects being established beginning in 2005 in different locations.
2—Also known as Point of Rocks area
3—Additional sites surveyed by BIO WEST in 2008. ACL overlaps with a BIO WEST 2008 site.
4—Access denied by landowners
5—Formerly Lower Meadow Valley Wash Miles 12.5 and 14, renamed USFWS 4a-e post flood in 2005

X=surveys conducted, no willow flycatchers documented; R=resident willow flycatchers documented (does not denote success or failure); M=migrant willow flycatchers documented, but no residents; --=location not surveyed in that year.

TABLE 4. 2009 Yellow-billed cuckoo summary for all sites surveyed by NDOW, including number of detections, and whether cuckoos have been detected at each site in previous years. Does not include info from other surveyors and contractors.

Geographic Area	Site Name	Survey Hours	# of Detections	Previous Detection? (Year)
Desert National Wildlife Range	Corn Creek	3.2	0	Y ('03, 04)
Moapa Valley	Warm Springs NA	20.83	2[1]	Y ('00-05, 08)
Clover Creek	Clover Creek	6.23	0	
Meadow Valley Wash	Mile 37, 39-40, 42-44	8.15	0	Y ('01)
Meadow Valley Wash	Mile 48-56	11.93	0	Y ('05)
Total		*50.34*	*2*	

1—Detections made by Bruce Lund

TABLE 5. Number of yellow-billed cuckoos detected at potential cuckoo sites historically monitored by NDOW, 2000-2008. 2000-2005 numbers reported include mated and unmated birds; 2006-8 numbers indicate detections only and may not be indicative of actual numbers of birds.

Location	Site Name	'00	'01	'02	'03	'04	'05	'06[3]	'07[3]	'08[3]	'09[3]
Desert NWR	Corn Creek	--	--	--	1	1	0	0	0	1	0
Pahranagat Valley	Crystal Springs	--	2	0	0	0	0	0	0	0	--
Pahranagat Valley	Crystal South	1	0	1	--[1]	--[1]	--[1]	--[1]	--[1]	--[1]	--[1]
Pahranagat Valley	Pahranagat North	8	5	--[1]	--[1]	--[1]	--[1]	--[1]	--[1]	--[1]	--[1]
Meadow Valley Wash	Mile 12.5 & 14	--	--	--	--	--	0	0	--	--	--
Meadow Valley Wash	Mile 37, 42-44	0	1	--	--	0	0	0	0	0	0
Meadow Valley Wash	Mile 48-56	--	0	--	--	--	1	0	0	0	0
Moapa Valley	Warm Springs NA[4]	9[2]	16	2	1	3	5	5[3]	0	3	2[5]
Oasis Valley	Angel's Ladies	--	--	--	--	--	--	--	0	1	--
Oasis Valley	South	1	2	0	1	0	1	0	0	1	--
Oasis Valley	Springdale	--	2	0	0	0	--[1]	--[1]	0[1]	0[1]	--
Oasis Valley	Torrance Ranch	--	--	--	--	--	--	--	0	0	--
Beaver Dam State Park	Beaver Dam	0	0	--	--	--	--	--	--	0	--
Total		*19*	*28*	*3*	*3*	*4*	*7*	*5*[3]	*0*	*6*[3]	*2*[3]

1—Access denied by landowners
2—Only year and location nests were located. 4 total nests
3—Bird detections rather than individual birds
4—Warm Springs Pump Station and Ranch combined into Warm Springs Natural Area in 2008
5—Detections made by area resident Bruce Lund
-- indicates survey not conducted in that year.

APPENDIX B

Southwestern Willow Flycatcher 2009 Datasheets and Area Maps

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009

Southwestern Willow Flycatcher Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Site Name: Ash Meadows—Bradford Spring Was site surveyed in previous year? Yes
If Yes, what site name was used? N/A

County: Nye State: Nevada USGS Quad: Devils Hole 1:24,000
Site Coordinates: Start: E 562556 N 4028559 Datum: NAD 83
Stop: E 562527 N 4028465 Elev: 2,250 ft

Survey # / Observer(s)	Date (m/d/y) Survey Time Survey Hours	# SWFL	Est # of Pairs	Est # of Terr.	New Nest? Y or N Nest #	Cowbirds? Y or N	Livestock or Sign? Y or N	Comments about this Survey
1. B. Conrad	Date: 6/2	0	0	0	N	Y 2	N	No flowing water through the site. Soil through the site is dry, canopy is 50% dry/dead.
C. Fosdick	Start:: 0530							
	Stop: 0730							
	Hrs: 8.0							
2 B. Conrad	Date: 6/23	0	0	0	N	Y 2	N	Site is inundated with H2O
C. Fosdick	Start: 0530							
	Stop: 0800							
	Hrs: 6.0							
3.	Date:							Additional Surveys by Bio-West
	Start:							
	Stop:							
	Hrs:							
4.	Date:							
	Start:							
	Stop:							
	Hrs:							
5.	Date:							
	Start:							
	Stop:							
	Hrs:							

Overall Site Summary (Total only resident SWFL)	Adults	Pairs	Territories	Nests	
	0	0	0	0	Were any SWFL's color banded? No
Total survey hours: 14.0					If Yes, report color combo in comments on next page

Name of Reporting Individual(s): Ben Conrad

Date Report Completed: 9/12/09 Page: 1 of 2

Fill in additional site information on last page of form.
Submit the original of this form. Retain a copy for your records.

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009

Southwestern Willow Flycatcher Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Fill in the following information completely. Submit original form by August 1st. Retain a copy for your records.

Reporting Individual: Ben Conrad Phone #: 702-486-5127 x 3717
Affiliation: Nevada Department of Wildlife E-mail: christy@ndow.org

Site Name: Ash Meadows—Bradford Spring Date Report Completed: 9/12/09

Did you verify this site name is consistent w/ that used in previous years? Yes
If different name, what name(s) was used in past? N/A
If site was surveyed last year, were the same general areas surveyed this year? Yes
If no, summarize in Comments, below.

Ownership or Management Authority for Survey Area (underline one): Federal
Federal State Tribal Private Municipal/County
Name of owner or management (e.g. Pahranagat NWR): USFWS, Ash Meadows NWR

Length of area surveyed: 0.25 acre patch (specify units)

Vegetation Characteristics: Overall, are the species predominantly comprised of (check one):
_X_ Native broadleaf plants (entirely or almost entirely, includes high-elevation willow)
____ Mixed native and exotic plants (mostly native)
____ Mixed native and exotic plants (mostly exotic)
____ Exotic/introduced plants (entirely or almost entirely)

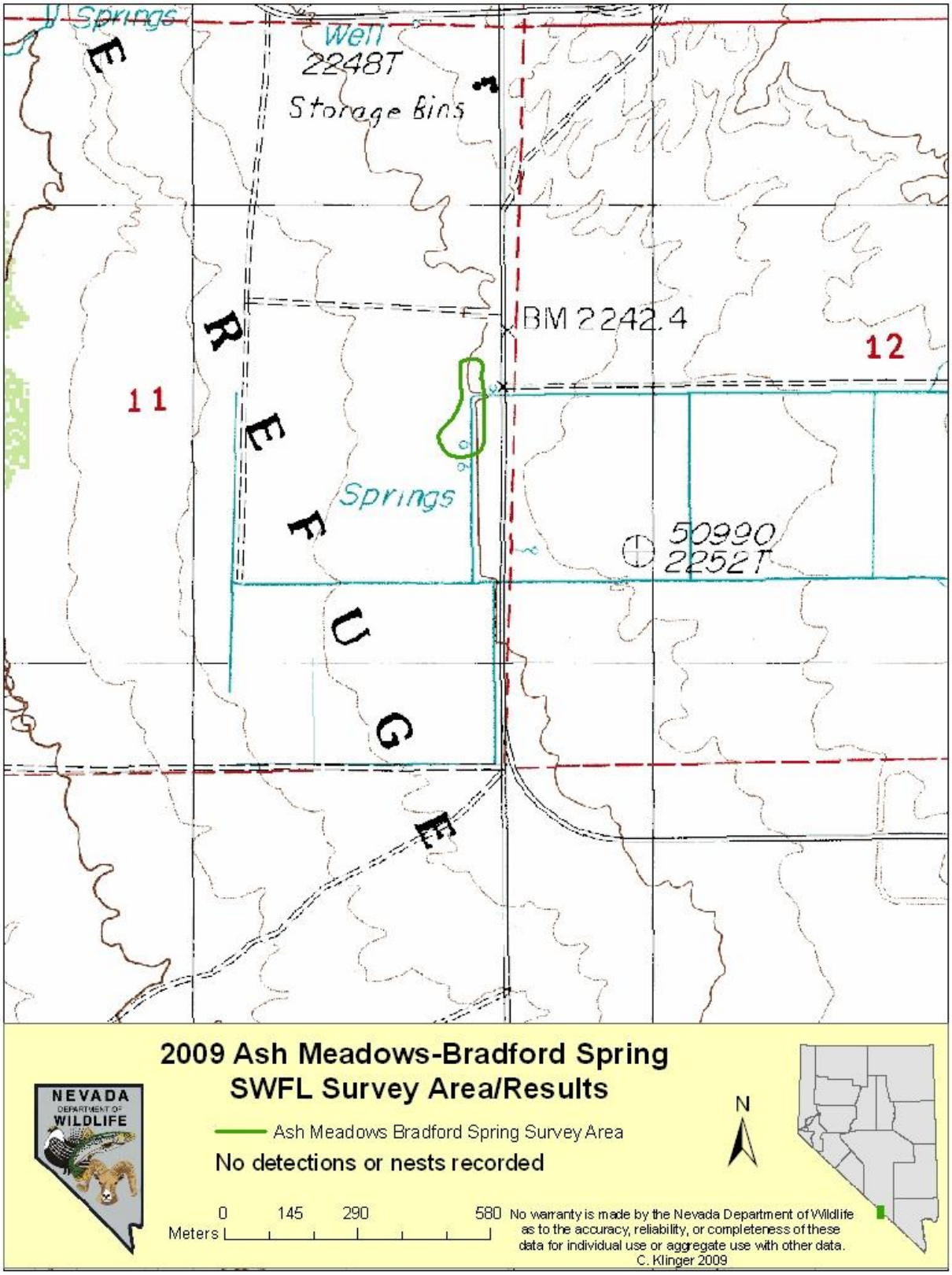
Identify the 2-3 predominant tree/shrub species: Coyote willow
Average height of canopy: 5.5 m (Do not put range. Specify units)
Was surface water or saturated soil present at or adjacent to the site? Yes
Distance from site to surface water or saturated soil: 0 m (specify units)
Did hydrologic conditions change significantly among visits (did site flood or dry out?) Yes

Attach a copy of USGS quad/topographical map or equivalent of the survey area, outlining the survey site, transects, patch size and shape and any nests and/or detections.

Comments (attach additional sheets if necessary):
Spring and flowing stream west side of patch

SWFL Detection and/or Nest Locations

Detection/Nest Date	UTM Easting	UTM Northing	Detection/Nest Date	UTM Easting	UTM Northing


Springs
Well
2248T
Storage Bins
BM 2242.4
12
11
REFUGE
Springs
50990
2252T
2009 Ash Meadows-Bradford Spring
SWFL Survey Area/Results
NEVADA
DEPARTMENT OF
WILDLIFE
Ash Meadows Bradford Spring Survey Area
No detections or nests recorded
N
0 145 290 580
Meters
No warranty is made by the Nevada Department of Wildlife as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
C. Klinger 2009

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009

Southwestern Willow Flycatcher Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Site Name: Ash Meadows—Forrest Spring Was site surveyed in previous year? Yes
If Yes, what site name was used? N/A

County: Nye State: Nevada USGS Quad: Devils Hole 1:24,000
Site Coordinates: Start: E 564535 N 4028184 Datum: NAD 83
Stop: E 564337 N 4028385 Elev: 2,252 ft

Survey # / Observer(s)	Date (m/d/y) Survey Time Survey Hours	# SWFL	Est # of Pairs	Est # of Terr.	New Nest? Y or N Nest #	Cowbirds? Y or N	Livestock or Sign? Y or N	Comments about this Survey
1. B. Conrad	Date: 6/2	0	0	0	N	Y 3	N	Dry soil, ground cover is mostly dead leaf litter
C. Fosdick	Start:: 0730							
	Stop: 0900							
	Hrs: 6.0							
2 B. Conrad	Date: 6/23	0	0	0	N	N 1	N	
C. Fosdick	Start: 8:00							
	Stop: 9:30							
	Hrs: 3.0							
3.	Date:							Additional Surveys by Bio-West
	Start:							
	Stop:							
	Hrs:							
4.	Date:							
	Start:							
	Stop:							
	Hrs:							
5.	Date:							
	Start:							
	Stop:							
	Hrs:							

Overall Site Summary (Total only resident SWFL)	Adults	Pairs	Territories	Nests	
Total survey hours: 9.0	0	0	0	0	Were any SWFL's color banded? No If Yes, report color combo in comments on next page

Name of Reporting Individual(s): Ben Conrad

Date Report Completed: 9/12/09 Page: 1 of 2

Fill in additional site information on last page of form.
Submit the original of this form. Retain a copy for your records.

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009

Southwestern Willow Flycatcher Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Fill in the following information completely. Submit original form by August 1st. Retain a copy for your records.

Reporting Individual: Ben Conrad Phone #: 702-486-5127 x 3717
Affiliation: Nevada Department of Wildlife E-mail: christy@ndow.org

Site Name: Ash Meadows—Forest Spring Date Report Completed: 9/12/09

Did you verify this site name is consistent w/ that used in previous years? Yes
If different name, what name(s) was used in past? N/A
If site was surveyed last year, were the same general areas surveyed this year? Yes
If no, summarize in Comments, below.

Ownership or Management Authority for Survey Area (underline one): Federal
Federal State Tribal Private Municipal/County
Name of owner or management (e.g. Pahranagat NWR): USFWS, Ash Meadows NWR

Length of area surveyed: 0.5 mi (specify units)

Vegetation Characteristics: Overall, are the species predominantly comprised of (check one):
____ Native broadleaf plants (entirely or almost entirely, includes high-elevation willow)
_X_ Mixed native and exotic plants (mostly native)
____ Mixed native and exotic plants (mostly exotic)
____ Exotic/introduced plants (entirely or almost entirely)

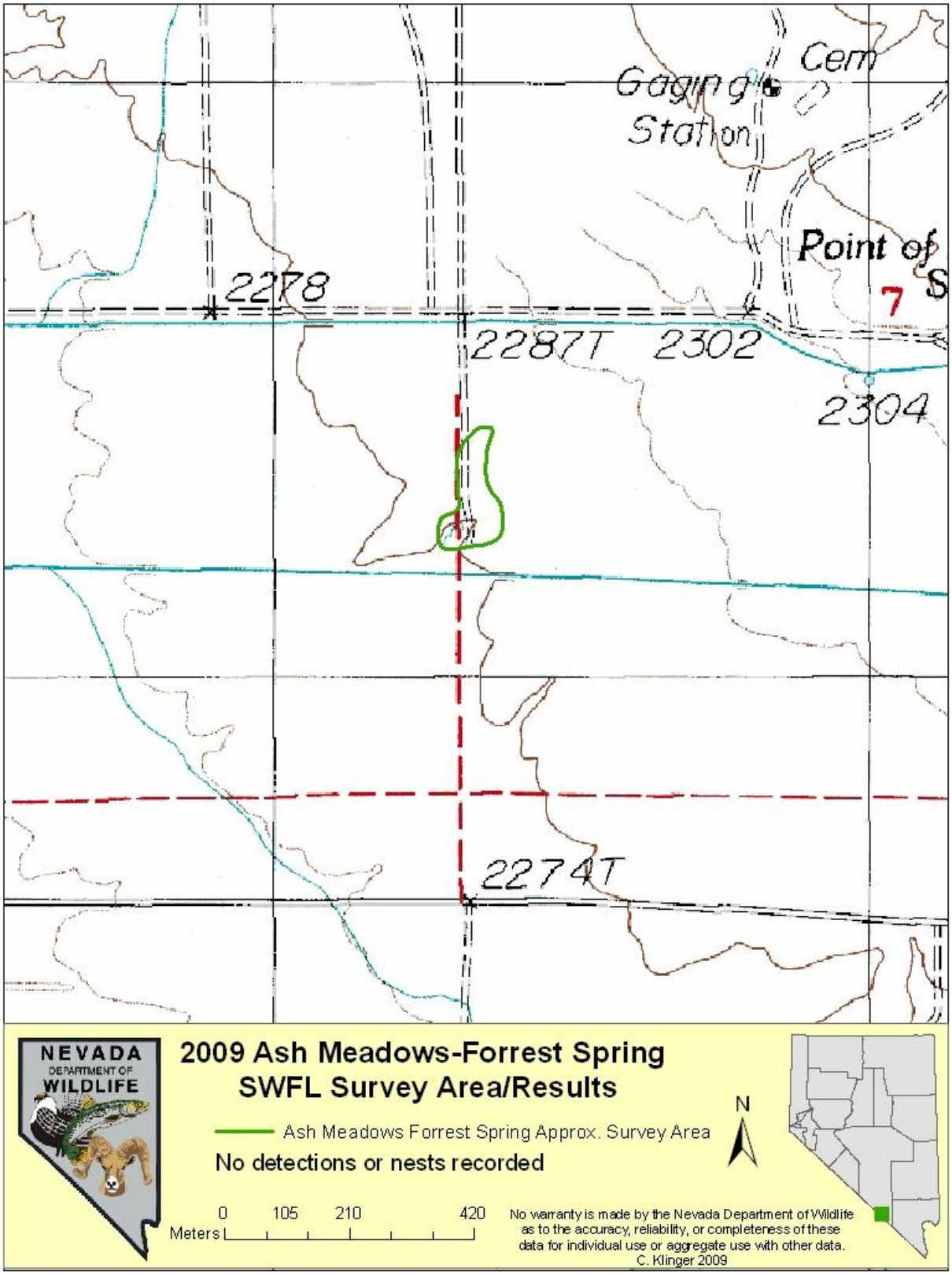
Identify the 2-3 predominant tree/shrub species: Screwbean mesquite, tamarisk, coyote willow
Average height of canopy: 5.1 m (Do not put range. Specify units)
Was surface water or saturated soil present at or adjacent to the site? Yes
Distance from site to surface water or saturated soil: 0 m (specify units)
Did hydrologic conditions change significantly among visits (did site flood or dry out?) No

Attach a copy of USGS quad/topographical map or equivalent of the survey area, outlining the survey site, transects, patch size and shape and any nests and/or detections.

Comments (attach additional sheets if necessary):
Forrest Spring is within/adjacent to the transect area. Coyote willow patch 6 m from spring.

SWFL Detection and/or Nest Locations

Detection/Nest Date	UTM Easting	UTM Northing	Detection/Nest Date	UTM Easting	UTM Northing


Gaging Station
Cem
Point of
2278
2287T
2302
2304
2274T
NEVADA
DEPARTMENT OF
WILDLIFE
2009 Ash Meadows-Forrest Spring
SWFL Survey Area/Results
Ash Meadows Forrest Spring Approx. Survey Area
No detections or nests recorded
N
0
105
210
420
Meters
No warranty is made by the Nevada Department of Wildlife as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
C. Klinger 2009

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009
Southwestern Willow Flycatcher Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Site Name: Ash Meadows—Horseshoe South Was site surveyed in previous year? Yes
If Yes, what site name was used? Ash Meadows—Horseshoe South

County: Nye State: Nevada USGS Quad: Devils Hole 1:24,000
Site Coordinates: Start: E 558906 N 4029927 Datum: NAD 83
Stop: E 558919 N 4029735 Elev: 2,175 ft

Survey # / Observer(s)	Date (m/d/y) Survey Time Survey Hours	# SWFL	Est # of Pairs	Est # of Terr.	New Nest? Y or N Nest #	Cowbirds? Y or N	Livestock or Sign? Y or N	Comments about this Survey
1. B. Conrad	Date: 5/18	0	0	0	N	Y 2	N	No response to playback, heard BHCO calling and harassing yellow warblers. High canopy closure.
C. Fosdick	Start:: 0850							
	Stop: 1000							
	Hrs: 4.6							
2 B. Conrad	Date: 6/2	0	0	0	N	Y 2	N	No response to playback. Canopy looks very healthy, with high canopy closure. Running water is hear through the canopy.
C. Fosdick	Start: 0630							
	Stop: 0745							
	Hrs: 5.0							
3.	Date:							Additional Surveys by Bio-West
	Start							
	Stop:							
	Hrs:							
4.	Date							
	Start:							
	Stop:							
	Hrs:							
5.	Date:							
	Start:							
	Stop:							
	Hrs:							
Overall Site Summary (Total only resident SWFL)			Adults	Pairs	Territories	Nests	Were any SWFL's color banded? No	
Total survey hours: 9.6			0	0	0	0	If Yes, report color combo in comments on next page	

Name of Reporting Individual(s): Ben Conrad

Date Report Completed: 9/12/09 Page: 1 of 2

Fill in additional site information on last page of form.
Submit the original of this form. Retain a copy for your records.

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009

Southwestern Willow Flycatcher Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Fill in the following information completely. Submit original form by August 1st. Retain a copy for your records.

Reporting Individual: Ben Conrad Phone #: 702-486-5127 x 3717
Affiliation: Nevada Department of Wildlife E-mail: christy@ndow.org

Site Name: Ash Meadows—Horseshoe South Date Report Completed: 9/12/09

Did you verify this site name is consistent w/ that used in previous years? Yes
If different name, what name(s) was used in past? N/A
If site was surveyed last year, were the same general areas surveyed this year? Yes
If no, summarize in Comments, below.

Ownership or Management Authority for Survey Area (underline one): Federal
Federal State Tribal Private Municipal/County
Name of owner or management (e.g. Pahranagat NWR): USFWS, Ash Meadows NWR

Length of area surveyed: 192 m (specify units)

Vegetation Characteristics: Overall, are the species predominantly comprised of (check one):
_X_ Native broadleaf plants (entirely or almost entirely, includes high-elevation willow)
____ Mixed native and exotic plants (mostly native)
____ Mixed native and exotic plants (mostly exotic)
____ Exotic/introduced plants (entirely or almost entirely)

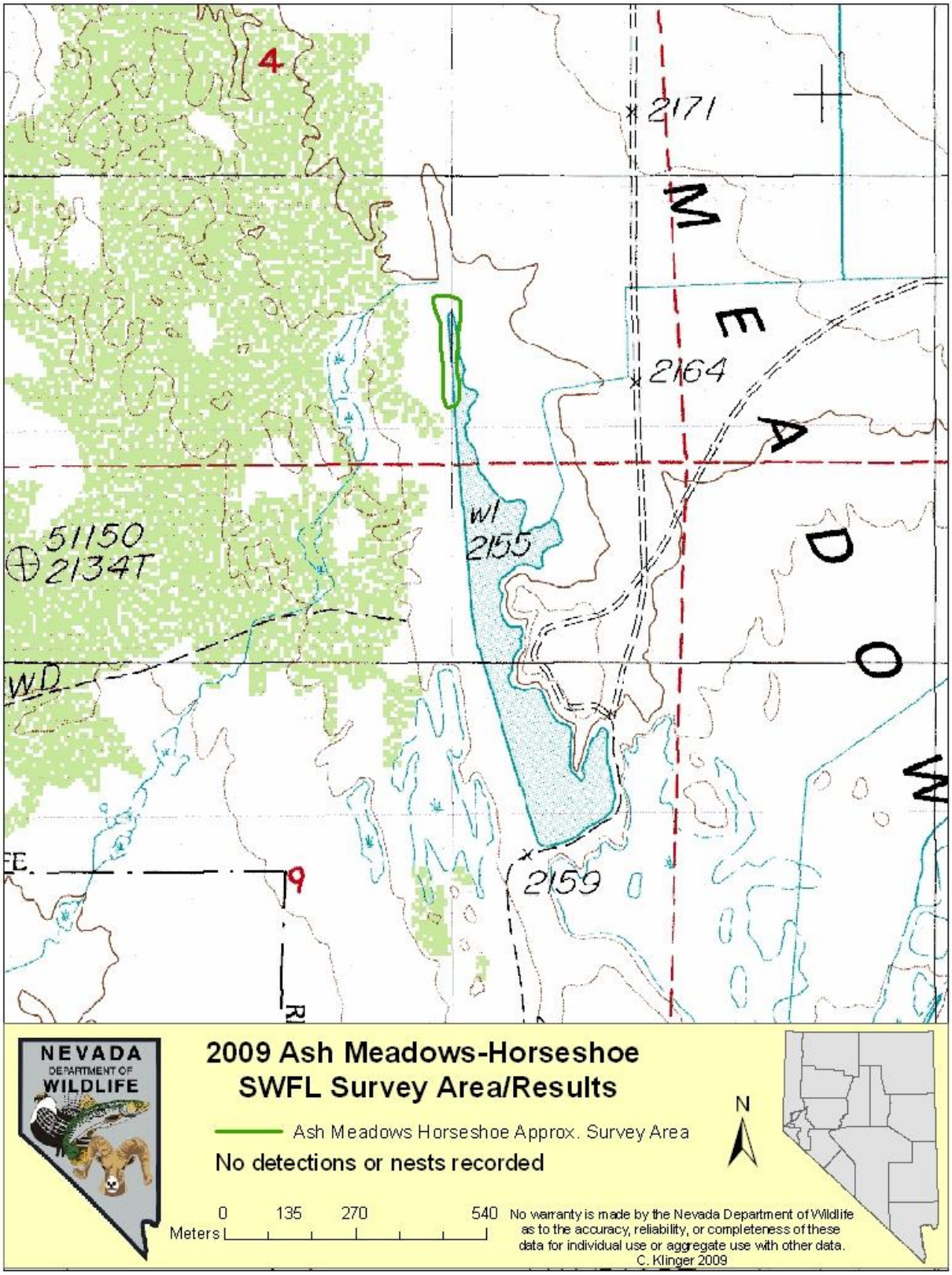
Identify the 2-3 predominant tree/shrub species: Coyote willow, cattail
Average height of canopy: 3.5 m (Do not put range. Specify units)
Was surface water or saturated soil present at or adjacent to the site? Yes
Distance from site to surface water or saturated soil: 0 m (specify units)
Did hydrologic conditions change significantly among visits (did site flood or dry out?) No

Attach a copy of USGS quad/topographical map or equivalent of the survey area, outlining the survey site, transects, patch size and shape and any nests and/or detections.

Comments (attach additional sheets if necessary):
This is a very dense patch of coyote willow, difficult to walk through. Water flows from north to south.

SWFL Detection and/or Nest Locations

Detection/Nest Date	UTM Easting	UTM Northing	Detection/Nest Date	UTM Easting	UTM Northing


4
2171
MEADOW
2164
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2155
51150
2134T
WD
9
2159
NEVADA
DEPARTMENT OF
WILDLIFE
2009 Ash Meadows-Horseshoe
SWFL Survey Area/Results
Ash Meadows Horseshoe Approx. Survey Area
No detections or nests recorded
N
0 135 270 540
Meters
No warranty is made by the Nevada Department of Wildlife as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
C. Klinger 2009

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009

Southwestern Willow Flycatcher Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Site Name: Corn Creek Was site surveyed in previous year? Yes

If Yes, what site name was used? Same

County: Clark State: Nevada USGS Quad: Las Vegas West 1:24,000

Site Coordinates: Start: E 647170 N 4033583 Datum: NAD 83

Stop: E 647170 N 4022583 Elev: 905 m

Survey # / Observer(s)	Date (m/d/y) Survey Time Survey Hours	# SWFL	Est # of Pairs	Est # of Terr.	New Nest? Y or N Nest #	Cowbirds? Y or N	Livestock or Sign? Y or N	Comments about this Survey
1. B. Conrad	Date: 6/3	0	0	0	N	Y 1	Y	Horse in adjacent pasture Standing water and tall (>10m) cottonwood and willow.
	Start:: 11:45							
	Stop: 1300							
	Hrs: 1.25							
2 B. Conrad	Date: 6/11	1	0	0	N	N	Y	1 SWFL detection by the entrance to the path heading along the spring closest to the parking lot. Individual responded to playback with weak Fitz-bews and whits.
	Start: 5:40							
	Stop: 7:40							
	Hrs: 2.0							
3. B. Conrad	Date: 6/23	0	0	0	N	N	Y	Horse in adjacent pasture. No SWFL detections. Previous survey individual was most likely a migrant.
	Start: 12:10							
	Stop: 12.40							
	Hrs: 0.5							
4. B. Conrad	Date: 6/30	0	0	0	N	N	Y	Horse in adjacent pasture
	Start: 0912							
	Stop: 0952							
	Hrs: 0.67							
5.	Date:							
	Start:							
	Stop:							
	Hrs:							

Overall Site Summary (Total only resident SWFL)	Adults	Pairs	Territories	Nests	
Total survey hours: 4.42	0	0	0	0	Were any SWFL's color banded? No If Yes, report color combo in comments on next page

Name of Reporting Individual(s): Ben Conrad

Date Report Completed: 9/12/09 Page: 1 of 2

Fill in additional site information on last page of form.
Submit the original of this form. Retain a copy for your records.

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009

Southwestern Willow Flycatcher Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Fill in the following information completely. Submit original form by August 1st. Retain a copy for your records.

Reporting Individual: Ben Conrad Phone #: 702-486-5127 x 3717
Affiliation: Nevada Department of Wildlife E-mail: christy@ndow.org

Site Name: Corn Creek Date Report Completed: 9/12/09
Did you verify this site name is consistent w/ that used in previous years? Yes
If different name, what name(s) was used in past? N/A
If site was surveyed last year, were the same general areas surveyed this year? Yes
If no, summarize in Comments, below.

Ownership or Management Authority for Survey Area (underline one): Federal
Federal State Tribal Private Municipal/County
Name of owner or management (e.g. Pahranagat NWR): USFWS Desert NWR

Length of area surveyed: 265 m (specify units)

Vegetation Characteristics: Overall, are the species predominantly comprised of (check one):
___ Native broadleaf plants (entirely or almost entirely, includes high-elevation willow)
_X_ Mixed native and exotic plants (mostly native)
____ Mixed native and exotic plants (mostly exotic)
____ Exotic/introduced plants (entirely or almost entirely)

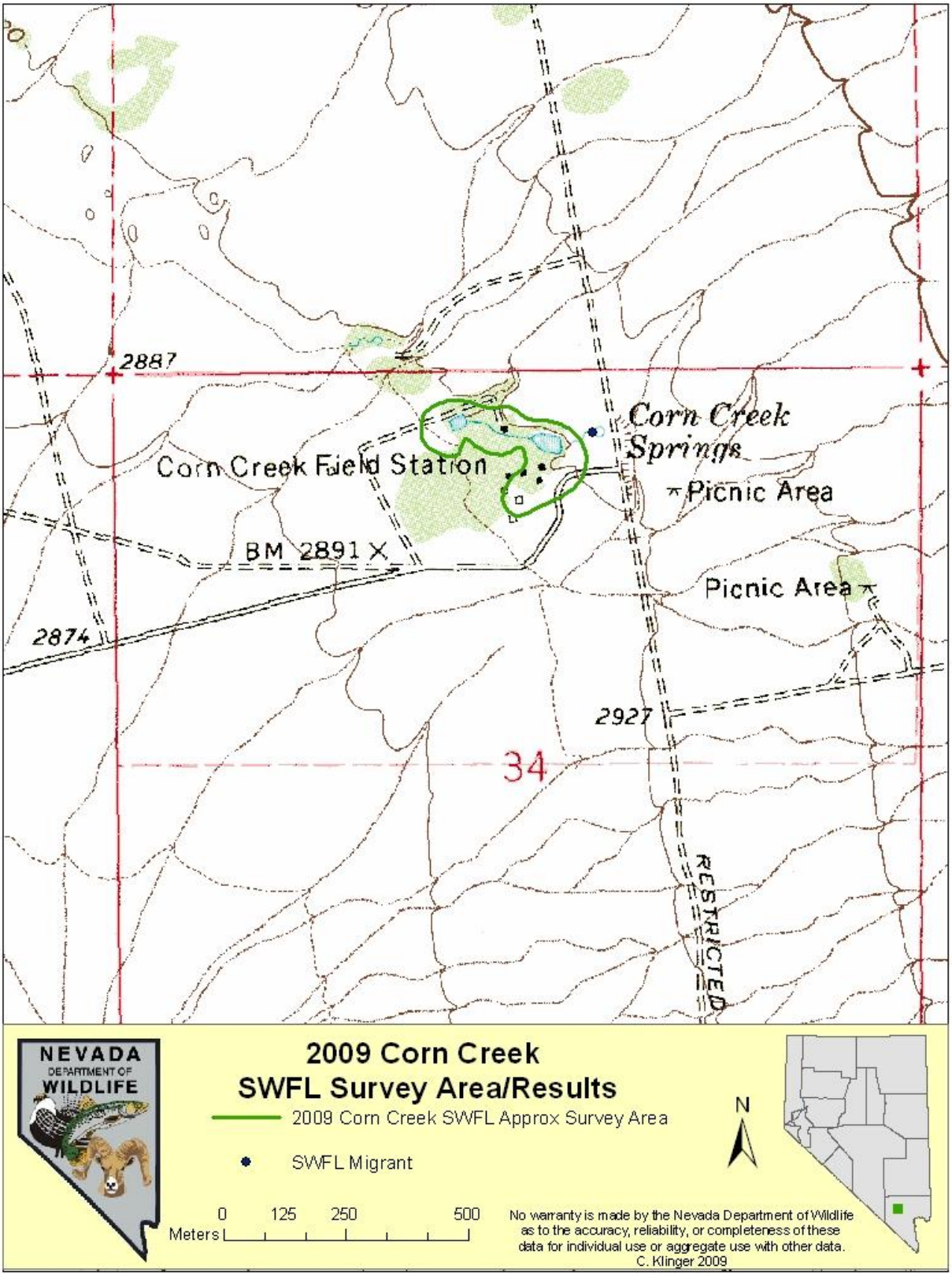
Identify the 2-3 predominant tree/shrub species: Cottonwood, black willow, black locust
Average height of canopy: 16.2 m (Do not put range. Specify units)
Was surface water or saturated soil present at or adjacent to the site? Yes
Distance from site to surface water or saturated soil: 0 m (specify units)
Did hydrologic conditions change significantly among visits (did site flood or dry out?) No

Attach a copy of USGS quad/topographical map or equivalent of the survey area, outlining the survey site, transects, patch size and shape and any nests and/or detections.

Comments (attach additional sheets if necessary):
This site is a small forested area with three small ponds fed by a nearby spring, flowing from the upper pond to two lower ponds by an irrigation ditch. Transect starts and stops at the same location; a loop following existing trails extending from the parking lot, along the south path of the upper pond to and around the lower ponds, around the housing area and back to the parking lot.

SWFL Detection and/or Nest Locations

Detection/Nest Date	UTM Easting	UTM Northing	Detection/Nest Date	UTM Easting	UTM Northing
6/11 Single migrant	647173	4033896			


2887
Corn Creek Springs
Corn Creek Field Station
Picnic Area
BM 2891 X
Picnic Area
2874
2927
34
RESTRICTED
NEVADA
DEPARTMENT OF
WILDLIFE
2009 Corn Creek
SWFL Survey Area/Results
2009 Corn Creek SWFL Approx Survey Area
SWFL Migrant
N
0
125
250
500
Meters
No warranty is made by the Nevada Department of Wildlife as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
C. Klinger 2009

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009
Southwestern Willow Flycatcher Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Site Name: Moapa Valley—Warm Springs Natural Area Was site surveyed in previous year? Yes
If Yes, what site name was used? Moapa Valley—Warm Springs Natural Area

County: Clark State: Nevada USGS Quad: Moapa West 1:24,000
Site Coordinates: Start: E 704539 N 4065257 Datum: NAD 83
Stop: E 704539 N 4065257 Elev: 538 m

Survey # / Observer(s)	Date (m/d/y) Survey Time Survey Hours	# SWFL	Est # of Pairs	Est # of Terr.	New Nest? Y or N Nest #	Cowbirds? Y or N	Livestock or Sign? Y or N	Comments about this Survey
1. B. Conrad	Date: 5/20	4	0	3	N	Y 3	N	No visual confirmation on the 3 SWFLs located in loop #2. Visual confirmation of SWFL in loop #3. No bands were seen on legs.
	Start:: 6:30							
	Stop: 1030							
	Hrs: 4.75							
2 B. Conrad	Date: 6/1	3	0	3	N	Y 3	N	Visual confirmation on SWFL at patch #2 in back of two track, by the insect-collecting tent. Additional SWFL adjacent to this territory, was not able to get a visual. Site was previously flooded as evident by fairly saturated soil throughout the patch
	Start: 0600							
	Stop: 1000							
	Hrs: 4							
3. B. Conrad	Date: 6/10	4	0	3	N	Y 4	N	New SWFL detection. Possible migrant however, due to willow patch being extremely narrow.
	Start: 0600							
	Stop: 1040							
	Hrs: 4.67							
4. B. Conrad	Date: 6/22	3	0	3	N	Y 3	N	New individual from previous survey was no longer present. Most likely a migrant. The other 3 SWFLs have been singing since 5/20 but still seem unpaired (no sign of 2 birds close to each other and single bird is singing from top of canopy). No new nests have been located.
	Start: 0630							
	Stop: 1040							
	Hrs: 4.16							
5. B. Conrad	Date: 7/7	4	0	4	N	Y 4	Y 5	There is was a new SWFL in the territory of another individual that has been there since 5/20 (704793 4065787) 5 cattle were also present at this site and ran upon arrival.
	Start: 0530							
	Stop: 0930							
	Hrs: 4.0							

Overall Site Summary (Total only resident SWFL)	Adults	Pairs	Territories	Nests	
Total survey hours: 29.58	4	1	1	1	Were any SWFL's color banded? No If Yes, report color combo in comments on next page

Name of Reporting Individual(s): Ben Conrad

Date Report Completed: 9/12/09 Page: 1 of 3

Fill in additional site information on last page of form.
Submit the original of this form. Retain a copy for your records.

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009

Southwestern Willow Flycatcher Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Site Name: Moapa Valley—Warm Springs Natural Survey Continuation Form

Survey # / Observer(s)	Date (m/d/y) / Survey Time / Survey Hours	# SWFL	Est # of Pairs	Est # of Terr.	New Nest? Y or N / Nest #	Cowbirds? Y or N	Livestock or Sign? Y or N	Comments about this Survey
6. B Conrad	Date: 7/22	2	1	1	N	Y 2 Pair	Y	Still signs of livestock by Willow Patch at WSNA #3. Individual at (704793 4065787) is now paired. Neither member of the pair is banded.
	Start: 6:00							
	Stop: 9:30							
	Hrs: 3.5							
7. C Tomlinson	Date: 8/4	5	1	1	Y	N	Y	Found 3 SWFL fledglings and 2 adults (pair) by the Willow Patch at WSNA #3, (704793 4065787). Also, a limited view of one adult (Female) which had a orange-red band on right leg, no band on left, and (Male) was not banded. Both actively defending. Did not see the nest.
	Start: 6:15							
	Stop: 10:45							
	Hrs: 4.5							
8.	Date:							
	Start:							
	Stop:							
	Hrs:							
9.	Date							
	Start:							
	Stop:							
	Hrs:							
10.	Date:							
	Start:							
	Stop:							
	Hrs:							
11.	Date:							
	Start:							
	Stop:							
	Hrs:							
12.	Date:							
	Start:							
	Stop:							
	Hrs:							

Southwestern Willow Flycatcher Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)
Fill in the following information completely. Submit original form by August 1st. Retain a copy for your records.

Reporting Individual: Ben Conrad Phone #: 702-486-5127 x 3717
Affiliation: Nevada Department of Wildlife E-mail: christy@ndow.org

Site Name: Moapa Valley—Warm Springs Natural Area Date Report Completed: 9/12/09

Did you verify this site name is consistent w/ that used in previous years? Yes
If different name, what name(s) was used in past? Warm Springs Ranch and Pump Station
If site was surveyed last year, were the same general areas surveyed this year? Yes
If no, summarize in Comments, below.

Ownership or Management Authority for Survey Area (underline one): Muni/Private
Federal State Tribal Private Municipal/County
Name of owner or management (e.g. Pahranagat NWR): Southern Nevada Water Authority

Length of area surveyed: 4200 m (specify units)

Vegetation Characteristics: Overall, are the species predominantly comprised of (check one):
__ Native broadleaf plants (entirely or almost entirely, includes high-elevation willow)
X Mixed native and exotic plants (mostly native)
____ Mixed native and exotic plants (mostly exotic)
____ Exotic/introduced plants (entirely or almost entirely)

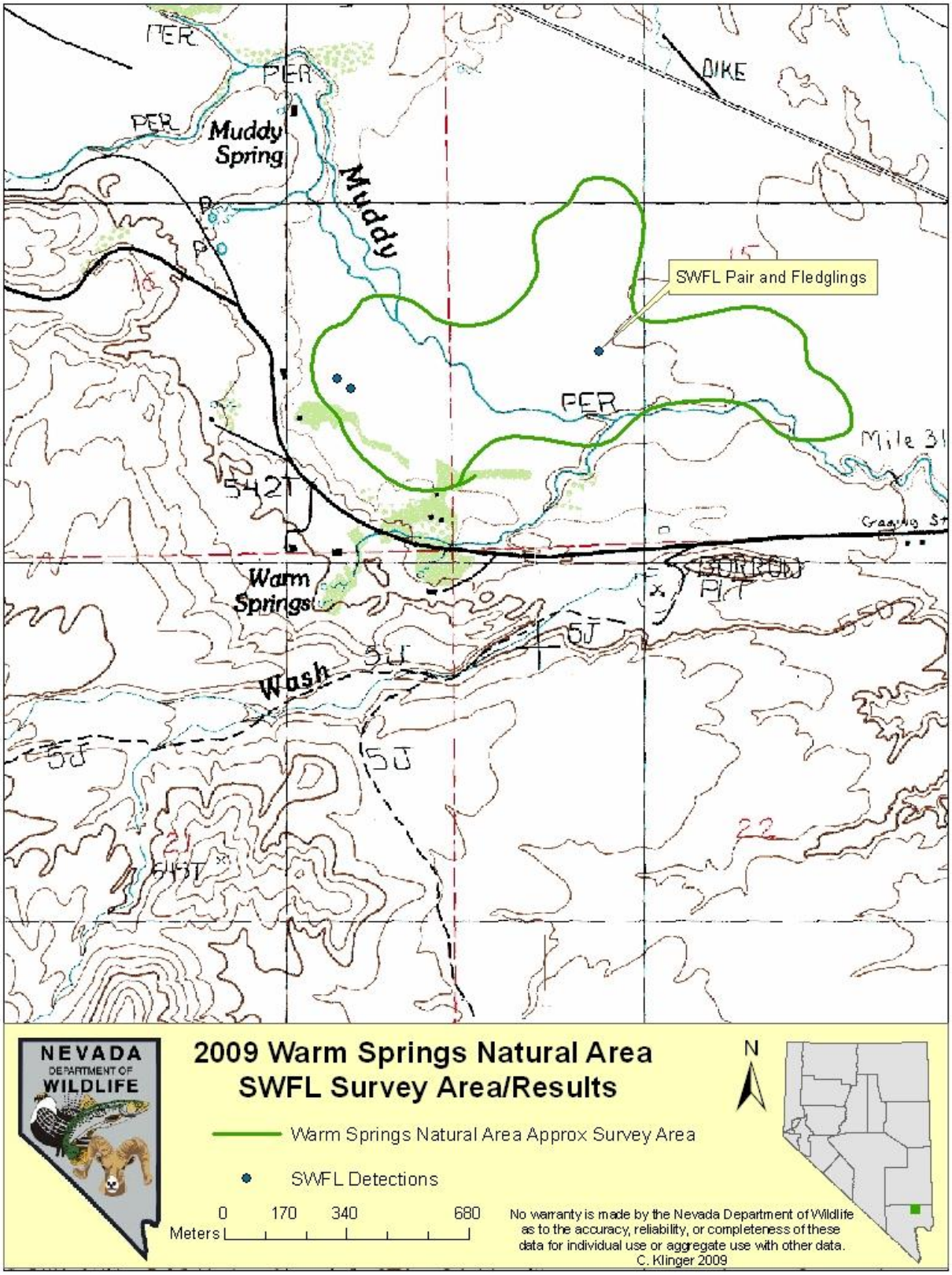
Identify the 2-3 predominant tree/shrub species: CW, mesquite, tamarisk, palm, cattail, arroweed
Average height of canopy: 30 m-Cott, 6 m-Tam & Mes (Do not put range. Specify units)
Was surface water or saturated soil present at or adjacent to the site? Yes
Distance from site to surface water or saturated soil: 1 m (specify units)
Did hydrologic conditions change significantly among visits (did site flood or dry out?) No

Attach a copy of USGS quad/topographical map or equivalent of the survey area, outlining the survey site, transects, patch size and shape and any nests and/or detections.

Comments (attach additional sheets if necessary):
Formerly two sites: Warm Springs Ranch and Pump Station, combined into Warm Springs Natural Area in 2008. Transect Area 1: E705109/N4065726 to E705264/N4065813 to E705420/N4065643
Transect Area 2:E704101/N4065682 to E704303/N4065495 and E704207/N4065854 to E704344/N4065741
Transect Area 3: E704784/N4066182 to E704676/N4065731

SWFL Detection and/or Nest Locations

Detection/Nest Date	UTM Easting	UTM Northing	Detection/Nest Date	UTM Easting	UTM Northing
5/20 Single	704064	4065711			
5/20 Single	704101	4065682			
6/10 Migrant	0704790	4065932			
8/4/09 Pair/3 Fledge	704793	4065787			


PER
PER
PER
Muddy Spring
Muddy
DIKE
SWFL Pair and Fledglings
PER
Mile 31
542T
Warm Springs
Wash
5J
5J
5J
5J
22
NEVADA
DEPARTMENT OF
WILDLIFE
2009 Warm Springs Natural Area
SWFL Survey Area/Results
N
Warm Springs Natural Area Approx Survey Area
SWFL Detections
0 170 340 680
Meters
No warranty is made by the Nevada Department of Wildlife as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
C. Klinger 2009

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009
Southwestern Willow Flycatcher Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Site Name: Meadow Valley Wash—Rainbow Canyon Was site surveyed in previous year? No
If Yes, what site name was used? N/A

County: Lincoln State: Nevada USGS Quad: Elgin & Elgin NE 1:24,000
Site Coordinates: Start: E 0714335 N 4151224 Datum: NAD 83
Stop: E 0713669 N 4152882 Elev: 1568 m

Survey # / Observer(s)	Date (m/d/y) Survey Time Survey Hours	# SWFL	Est # of Pairs	Est # of Terr.	New Nest? Y or N Nest #	Cowbirds? Y or N	Livestock or Sign? Y or N	Comments about this Survey
1. B. Conrad	Date: 6/25	0	0	0	N	N	N	Good looking willow habitat about 3 m tall, however no SWIFLs present
	Start:: 6:55							
	Stop: 7:31							
	Hrs: 0.6							
2 B. Conrad	Date: 7/10	0	0	0	N	N	N	
	Start: 7:23							
	Stop: 8:07							
	Hrs:0.73							
3. C. Klinger	Date: 7/31	0	0	0	N	N	N	
	Start: 7:15							
	Stop: 8:00							
	Hrs: 0.75							
4. C.Klinger	Date: 8/13	0	0	0	N	N	N	
	Start: 7:00							
	Stop: 7:45							
	Hrs: 0.75							
5.	Date:							
	Start:							
	Stop:							
	Hrs:							
Overall Site Summary—Total only resident YBCU detections and pairs, if known.			Detect	Pairs	Territories	Nests	Were any YBCU's color banded? No	
Total survey hours: 2.83			0	0	0	0	If Yes, report color combo in comments on last page	

Name of Reporting Individual(s): Ben Conrad

Date Report Completed: 9/12/09 Page: 1 of 2

Fill in additional site information on last page of form.
Submit the original of this form. Retain a copy for your records.

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009

Yellow-billed Cuckoo Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Fill in the following information completely. Submit original form by Sept 30th. Retain a copy for your records.

Reporting Individual: Ben Conrad Phone #: 702-486-5127 x 3717
Affiliation: Nevada Department of Wildlife E-mail: christy@ndow.org

Site Name: Meadow Valley Wash—Rainbow Canyon Date Report Completed: 9/12/09

Did you verify this site name is consistent w/ that used in previous years? N/A
If different name, what name(s) was used in past? N/A
If site was surveyed last year, were the same general areas surveyed this year? N/A
If no, summarize in Comments, below.

Ownership or Management Authority for Survey Area (underline one): Private
Federal State Tribal Private Municipal/County
Name of owner or management (e.g. Pahranagat NWR): Private/Railroad

Length of area surveyed: (specify units)

Vegetation Characteristics: Overall, are the species predominantly comprised of (check one):
____ Native broadleaf plants (entirely or almost entirely, includes high-elevation willow)
_X_ Mixed native and exotic plants (mostly native)
____ Mixed native and exotic plants (mostly exotic)
____ Exotic/introduced plants (entirely or almost entirely)

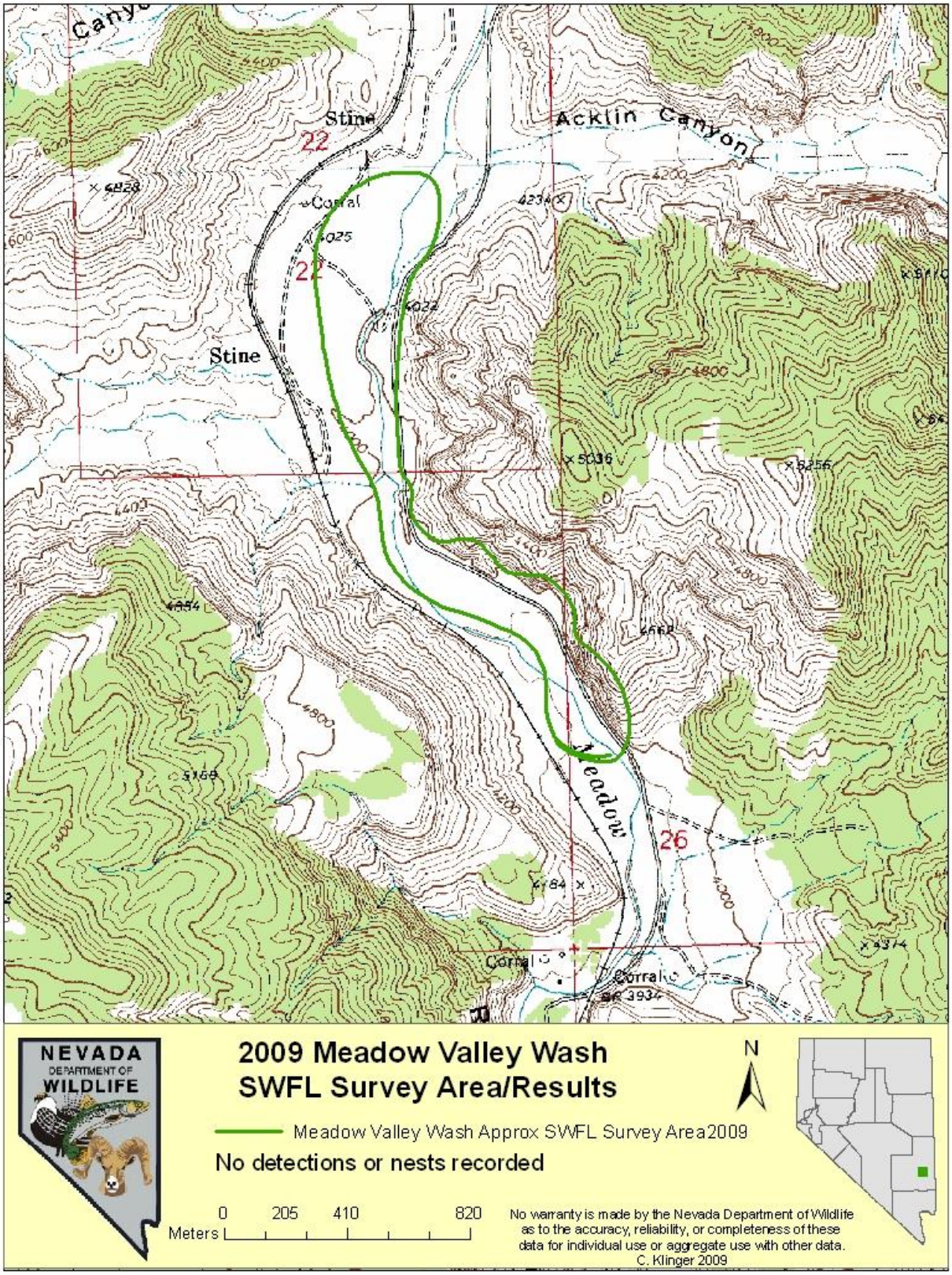
Identify the 2-3 predominant tree/shrub species: Cottonwood, coyote willow
Average height of canopy: 15 m (Do not put range. Specify units)
Was surface water or saturated soil present at or adjacent to the site? Yes
Distance from site to surface water or saturated soil: 0 m (specify units)
Did hydrologic conditions change significantly among visits (did site flood or dry out?) No

Attach a copy of USGS quad/topographical map or equivalent of the survey area, outlining the survey site, transects, patch size and shape and any nests and/or detections.

Comments (attach additional sheets if necessary):
Meadow Valley Wash stream flows along transect, some places 5-6' wide x 5-6" deep. SWFL surveys are completed at two willow patches along the YBCU transect (mi 42-44).

SWIFL Detection and/or Nest Locations

Detection/Nest Date	UTM Easting	UTM Northing	Detection/Nest Date	UTM Easting	UTM Northing


Stine
22
Acklin Canyon
Corral
Stine
22
Meadow
26
Corral
Corral
NEVADA
DEPARTMENT OF
WILDLIFE
2009 Meadow Valley Wash
SWFL Survey Area/Results
N
Meadow Valley Wash Approx SWFL Survey Area2009
No detections or nests recorded
0 205 410 820
Meters
No warranty is made by the Nevada Department of Wildlife as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
C. Klinger 2009

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009

Southwestern Willow Flycatcher Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Site Name: Pahranagat Valley—Key Pittman Was site surveyed in previous year? Yes
If Yes, what site name was used? Same

County: Lincoln State: Nevada USGS Quad: Hiko 1:24,000
Site Coordinates: Start: E 656667 N 4158686 Datum: NAD 83
Stop: E 656669 N 4159646 Elev: 1192 m

Survey # / Observer(s)	Date (m/d/y) Survey Time Survey Hours	# SWFL	Est # of Pairs	Est # of Terr.	New Nest? Y or N Nest #	Cowbirds? Y or N	Livestock or Sign? Y or N	Comments about this Survey
1. B. Conrad C. Tomlinson	Date: 5/21 Start:: 0630 Stop: 10:30 Hrs: 8.0	18	1	13	N	Y 4	N	Patches are not inundated with water. Patch 12 had very little standing water on the east side by the lake. Play-back was not needed birds were already singing upon arrival.
2 B. Conrad	Date: 5/29 Start: 0630 Stop: 1000 Hrs: 3.5	16	1	12	N	Y 3	N	Possible pair in patch 11. Patch was extremely quiet on approach. Call back was played which induced a very brief fitz-bew response. Additionally, interaction calls were heard.
3. B. Conrad	Date: 6/4 Start: 0630 Stop: 1115 Hrs: 5.25	19	6	14	Y 10A	Y 2	N	Patches only about 1/8 covered, closest to water. Found a new nest in patch 10, but most likely it was still under construction. Female, close by whitting and agitated by presence.
4. B. Conrad C. Tomlinson	Date: 6/9 Start: 0600 Stop: 1130 Hrs: 11.0	25	6	14	Y 6A,7A, 8A	Y 2	N	New nests 6A empty, 7A has four eggs, and 8A is empty. Nest 10A is still empty. In Patch 3 there was a nest on the ground (perhaps old?)
5. B. Conrad C. Tomlinson	Date: 6/19 Start: 0600 Stop: 1130 Hrs: 11.0	22	9	13	Y 9A, 4A, 5A	Y 3	N	Nest 4A is new with no eggs, Nest 5A is new with 1 egg, Nest 6A had 3 eggs, 7A 3 nestlings, 8A 4 eggs, 9A is a new nest that is empty, 10A contains 4 eggs.
Overall Site Summary (Total only resident SWFL) Total survey hours: 73.84			Adults 23	Pairs 11	Territories 11	Nests 10+	Were any SWFL's color banded? Yes If Yes, report color combo in comments on next page	

Name of Reporting Individual(s): Ben Conrad

Date Report Completed: 9/12/09 Page: 1 of 3

Fill in additional site information on last page of form.
Submit the original of this form. Retain a copy for your records.

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009

Southwestern Willow Flycatcher Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Site Name: Pahranagat Valley-Key Pittman Survey Continuation Form

Survey # / Observer(s)	Date (m/d/y) / Survey Time / Survey Hours	# SWFL	Est # of Pairs	Est # of Terr.	New Nest? Y or N / Nest #	Cowbirds? Y or N	Livestock or Sign? Y or N	Comments about this Survey
6. B. Conrad	Date: 6/24	21	9	12	Y 11A	Y 4	N	Nest 4A has a single egg, Nest 5A no longer had an egg and female was seen gathering nest material or building a new nest (?), Nest 6A had 3 eggs, Nest 7A had 2 -4 nestlings with down, Nest 8A had 2 nestlings (just born) and 2 eggs, Nest 9A had 2 new eggs, Nest 10A still had 4 eggs, new nest 11A had 4 eggs.
	Start: 0555							
	Stop: 1020							
	Hrs: 4.42							
7. B. Conrad	Date: 7/2	21	10	12	N	Y 2	N	Nest 4A had 2 eggs. Nest 5a was empty, could not find a new nest in Patch 5. Nest 6A was depredated. Nest 7A had 2 birds banded on 6/26. No sign of fledglings. Nest 8A had 2 nestlings (9 days old). Nest 9A female incubating 3 eggs. Nest 10A 4 nestlings (about 5-6 days old). Nest 11A (4 5-6 day old nestlings).
	Start: 0550							
	Stop: 1030							
	Hrs: 4.67							
8. B. Conrad	Date: 7/9	27	11	12	N	Y 2	N	Patch had a SWFL carrying food, perhaps to some fledglings. Patch 4 had approximately 3 young in nest 4A. Patch 9A had 3 nestlings 1-2 days old. Nest 10A had 3-4 nestlings close to fledgling age. Nest 11A had 4 fledglings close to nest. SWIFL # includes fledglings but not nestlings.
	Start: 0600							
	Stop: 1030							
	Hrs: 4.5							
9. B. Conrad	Date:7/17	29	11	12	N	Y 3	N	Nest 4A had 3 nesting's. Nest 9A had 3 nestlings. Patch 10 had 2 fledglings, and Patch 11 had 4 fledglings. SWIFL # includes fledglings but not nestlings.
	Start: 0605							
	Stop: 1045							
	Hrs: 4.67							
10. B. Conrad	Date: 7/23	48	11	12	N	Y 2	N	Patch 2 had 2 fledgling, Patch 4 had 3 fledglings, patch 7 had 2 fledglings, patch 8 had 1 fledgling, patch 9 had 3 fledglings, patch 10 had 4 fledglings, and patch 11 had 4 fledglings. SWIFL # includes fledglings but not nestlings.
	Start: 0600							
	Stop: 1000							
	Hrs: 4							
11. C. Tomlinson	Date: 8/03	21	5	10	N	N	Y	Patch 3 had 2 adults, Patch 4 2 adults and 1 fledgling, Patch 5 had 1 adult and 2 fledglings, Patch 7 1 adult, Patch 8 had 2 adults whitting, Patch 9 had 2 adults (1 ad. w/ KGK green band on L leg) and 3 fledglings. Patch 10 had 2 adults, Patch 11 had 1 adult and 12 had 1 adult. Livestock in the area.
	Start: 0610							
	Stop: 1200							
	Hrs: 5.83							
12. C. Tomlinson	Date: 8/14	8	2	2	N	Y 2	Y	Patch 4 Adult – water is 10 m from willows. Patch 5 had 2 adults and 2 fledglings. Patch 8 had 2 adult (one of which had metal silver band on R leg). Patch 9 1 adult. It appears SWFL's are are moving between patches.
C. Klinger	Start: 0600							
	Stop: 0930							
	Hrs: 7.0							

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009

Southwestern Willow Flycatcher Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Fill in the following information completely. Submit original form by August 1st. Retain a copy for your records.

Reporting Individual: Ben Conrad Phone #: 702-486-5127 x 3717
Affiliation: Nevada Department of Wildlife E-mail: christy@ndow.org

Site Name: Pahranagat Valley—Key Pittman Date Report Completed: 9/12/09

Did you verify this site name is consistent w/ that used in previous years? Yes
If different name, what name(s) was used in past? N/A
If site was surveyed last year, were the same general areas surveyed this year? Yes
If no, summarize in Comments, below.

Ownership or Management Authority for Survey Area (underline one): State
Federal State Tribal Private Municipal/County
Name of owner or management (e.g. Pahranagat NWR): Key Pittman Wildlife Management Area

Length of area surveyed: 0.9 km (specify units)

Vegetation Characteristics: Overall, are the species predominantly comprised of (check one):
_X_ Native broadleaf plants (entirely or almost entirely, includes high-elevation willow)
____ Mixed native and exotic plants (mostly native)
____ Mixed native and exotic plants (mostly exotic)
____ Exotic/introduced plants (entirely or almost entirely)

Identify the 2-3 predominant tree/shrub species: Coyote willow, cattail, bulrush
Average height of canopy: 6.7m (Do not put range. Specify units)
Was surface water or saturated soil present at or adjacent to the site? Yes
Distance from site to surface water or saturated soil: 0-10 m (specify units)
Did hydrologic conditions change significantly among visits (did site flood or dry out?) Yes

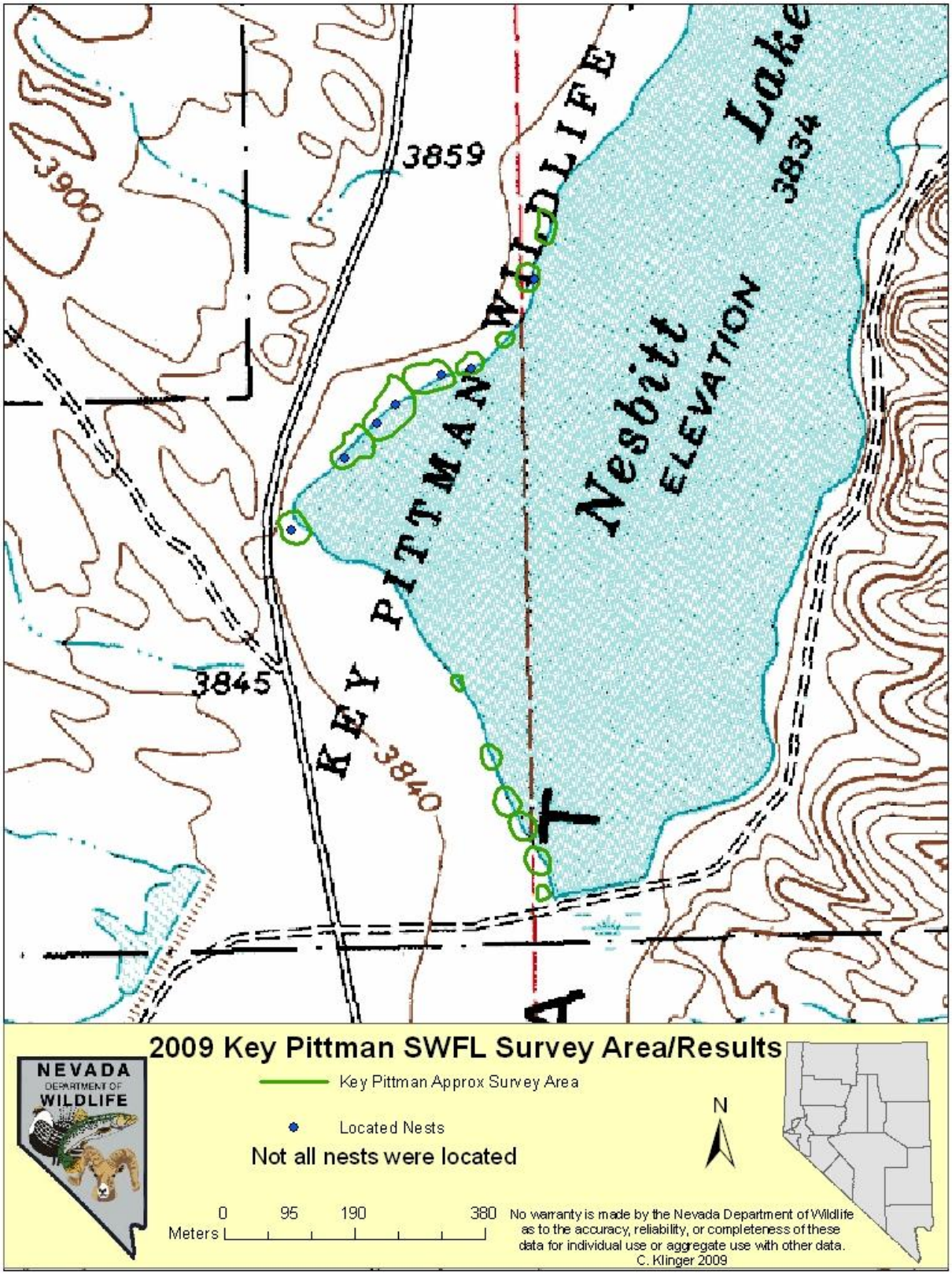
Attach a copy of USGS quad/topographical map or equivalent of the survey area, outlining the survey site, transects, patch size and shape and any nests and/or detections.

Comments (attach additional sheets if necessary):

SWFL Detection and/or Nest Locations

Detection/Nest Date	UTM Easting	UTM Northing	Detection/Nest Date	UTM Easting	UTM Northing
Nest 10A 6/4/2009	0656482	4159612			
Nest 6A 6/9/2009	0656296	4159482			
Nest 7A 6/9/2009	0656344	4159533			
Nest 8A 6/9/2009	0656370	4159560			
Nest 9A 6/19/2009	0656438	4159604			
Nest 5A 6/19/2009	0656218	4159377			
Nest 11A 6/24/09	0656574	4159742			
Individual	0656591	4159815			

Page: 3 of 3


3900
3859
3845
3840
KEY PITTMAN WILDLIFE
Nesbitt
ELEVATION
3834
Lake
2009 Key Pittman SWFL Survey Area/Results
Key Pittman Approx Survey Area
Located Nests
Not all nests were located
N
NEVADA
DEPARTMENT OF
WILDLIFE
0
95
190
380
Meters
No warranty is made by the Nevada Department of Wildlife as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
C. Klinger 2009

APPENDIX C

Yellow-billed Cuckoo 2009 Datasheets and Area Maps

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009
Yellow-billed Cuckoo Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Site Name: Corn Creek Was site surveyed in previous year? Yes
If Yes, what site name was used? Same

County: Clark State: Nevada USGS Quad: Las Vegas West 1:24,000
Site Coordinates: Start: E 647170 N 4033583 Datum: NAD 83
Stop: E 647170 N 4033583 Elev: 905 m

Survey # / Observer(s)	Date (m/d/y) Survey Time Survey Hours	# YBCU	Est # of Pairs	Est # of Terr.	New Nest? Y or N Nest #	Est Distance to bird	Direction to bird (in degrees)	Comments about this Survey
1. B. Conrad	Date: 6/11	0	0	0	N			
	Start:: 0540							
	Stop: 0740							
	Hrs: 2.0							
2 B. Conrad	Date: 6/23	0	0	0	N			Horse in adjacent pasture. Tree limbs cut, trimmed along channel going west, Russian olive along east side warehouse yard fence dead/dying
	Start: 1210							
	Stop: 1240							
	Hrs: 0.5							
3. B. Conrad	Date: 6/30	0	0	0	N			
	Start: 0912							
	Stop: 0952							
	Hrs: 0.67							
4.	Date:							
	Start:							
	Stop:							
	Hrs:							
5.	Date							
	Start:							
	Stop:							
	Hrs							

Overall Site Summary—Total only resident YBCU detections and pairs, if known.	Detect	Pairs	Territories	Nests	
	0	0	0	0	Were any YBCU's color banded? No
Total survey hours: 3.17					If Yes, report color combo in comments on last page

Name of Reporting Individual(s): Ben Conrad

Date Report Completed: 9/12/09 Page: 1 of 2

Fill in additional site information on last page of form.
Submit the original of this form. Retain a copy for your records.

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009

Yellow-billed Cuckoo Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Fill in the following information completely. Submit original form by Sept 30th. Retain a copy for your records.

Reporting Individual: Ben Conrad Phone #: 702-486-5127 x 3717

Affiliation: Nevada Department of Wildlife E-mail: christy@ndow.org

Site Name: Corn Creek Date Report Completed: 9/12/09

Did you verify this site name is consistent w/ that used in previous years? Yes

If different name, what name(s) was used in past? N/A

If site was surveyed last year, were the same general areas surveyed this year? Yes

If no, summarize in Comments, below.

Ownership or Management Authority for Survey Area (underline one): Federal

Federal State Tribal Private Municipal/County

Name of owner or management (e.g. Pahranagat NWR): FWS Desert National Wildlife Range

Length of area surveyed: 265 m (specify units)

Vegetation Characteristics: Overall, are the species predominantly comprised of (check one):

____ Native broadleaf plants (entirely or almost entirely, includes high-elevation willow)

_X_ Mixed native and exotic plants (mostly native)

____ Mixed native and exotic plants (mostly exotic)

____ Exotic/introduced plants (entirely or almost entirely)

Identify the 2-3 predominant tree/shrub species: Cottonwood, black willow, black locust

Average height of canopy: 16 m (Do not put range. Specify units)

Was surface water or saturated soil present at or adjacent to the site? Yes

Distance from site to surface water or saturated soil: 0 m (specify units)

Did hydrologic conditions change significantly among visits (did site flood or dry out?) No

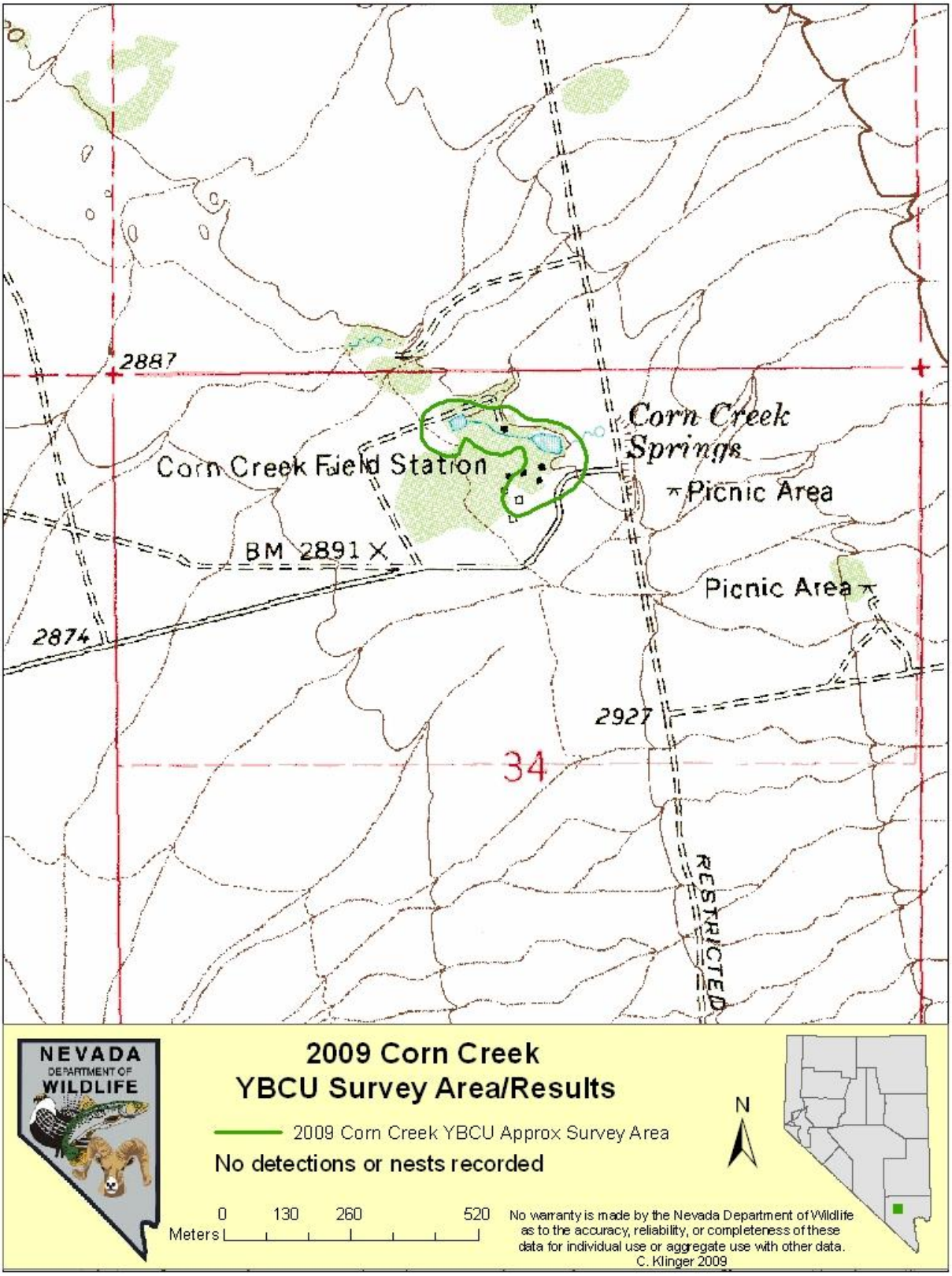
Attach a copy of USGS quad/topographical map or equivalent of the survey area, outlining the survey site, transects, patch size and shape and any nests and/or detections.

Comments (attach additional sheets if necessary):

This site is a small forested area with three small ponds fed by a nearby spring, flowing from the upper pond to two lower ponds by an irrigation ditch. Transect starts and stops at the same location; a loop following existing trails extending from the parking lot, along the south path of the upper pond to and around the lower ponds, around the housing area and back to the parking lot.

YBCU Detection and/or Nest Locations

Detection/Nest Date	UTM Easting	UTM Northing	Detection/Nest Date	UTM Easting	UTM Northing


2887
Corn Creek Springs
Corn Creek Field Station
Picnic Area
BM 2891 X
Picnic Area
2874
2927
34
RESTRICTED
NEVADA
DEPARTMENT OF
WILDLIFE
2009 Corn Creek
YBCU Survey Area/Results
2009 Corn Creek YBCU Approx Survey Area
No detections or nests recorded
N
0
130
260
520
Meters
No warranty is made by the Nevada Department of Wildlife as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
C. Klinger 2009

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009
Yellow-billed Cuckoo Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Site Name: Moapa Valley—Warm Springs Natural Area Was site surveyed in previous year? Yes
If Yes, what site name was used? Warm Springs Ranch and Pump Station

County: Clark State: Nevada USGS Quad: Moapa West 1:24,000
Site Coordinates: Start: E See Comments N See Comments Datum: NAD 83
Stop: E See Comments N See Comments Elev: 539 m

Survey # / Observer(s)	Date (m/d/y) Survey Time Survey Hours	# YBCU	Est # of Pairs	Est # of Terr.	New Nest? Y or N Nest #	Est Distance to bird	Direction to bird (in degrees)	Comments about this Survey
1. B. Conrad	Date: 6/10	0	0	0	N			
	Start:: 0600							
	Stop: 1040							
	Hrs: 4.67							
2 B. Conrad	Date: 6/22	0	0	0	N			
	Start: 0630							
	Stop: 1040							
	Hrs: 4.16							
3. B. Conrad	Date: 7/7	0	0	0	N			
	Start: 0530							
	Stop: 0930							
	Hrs: 4.0							
4. B. Conrad	Date: 7/24	0	0	0	N			
	Start: 6:00							
	Stop: 9:30							
	Hrs: 3.5							
5. C. Tomlinson	Date: 8/4	0	0	0	N			
	Start: 0610							
	Stop: 1045							
	Hrs: 4.5							

Overall Site Summary—Total only resident YBCU detections and pairs, if known.	Detect	Pairs	Territories	Nests	Were any YBCU's color banded? No
Total survey hours: 20.83	0	0	0	0	If Yes, report color combo in comments on last page

Name of Reporting Individual(s): Ben Conrad

Date Report Completed: 9/12/09 Page: 1 of 2

Fill in additional site information on last page of form.
Submit the original of this form. Retain a copy for your records.

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009

Yellow-billed Cuckoo Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Fill in the following information completely. Submit original form by Sept 30th. Retain a copy for your records.

Reporting Individual: Ben Conrad Phone #: 702-486-5127 x 3717
Affiliation: Nevada Department of Wildlife E-mail: christy@ndow.org

Site Name: Moapa Valley—Warm Springs Natural Area Date Report Completed: 9/12/09

Did you verify this site name is consistent w/ that used in previous years? Yes
If different name, what name(s) was used in past? Warm Springs Ranch and Pump Station
If site was surveyed last year, were the same general areas surveyed this year? Yes
If no, summarize in Comments, below.

Ownership or Management Authority for Survey Area (underline one): Muni/Private
Federal State Tribal Private Municipal/County
Name of owner or management (e.g. Pahranagat NWR): Southern Nevada Water Authority

Length of area surveyed: 4200 m (specify units)

Vegetation Characteristics: Overall, are the species predominantly comprised of (check one):
____ Native broadleaf plants (entirely or almost entirely, includes high-elevation willow)
_X_ Mixed native and exotic plants (mostly native)
____ Mixed native and exotic plants (mostly exotic)
____ Exotic/introduced plants (entirely or almost entirely)

Identify the 2-3 predominant tree/shrub species: CW, mesquite, tamarisk, palm, cattail, arroweed
Average height of canopy: 30 m-Cott, 6 m-Tam & Mes (Do not put range. Specify units)
Was surface water or saturated soil present at or adjacent to the site? Yes
Distance from site to surface water or saturated soil: 1 m (specify units)
Did hydrologic conditions change significantly among visits (did site flood or dry out?) No

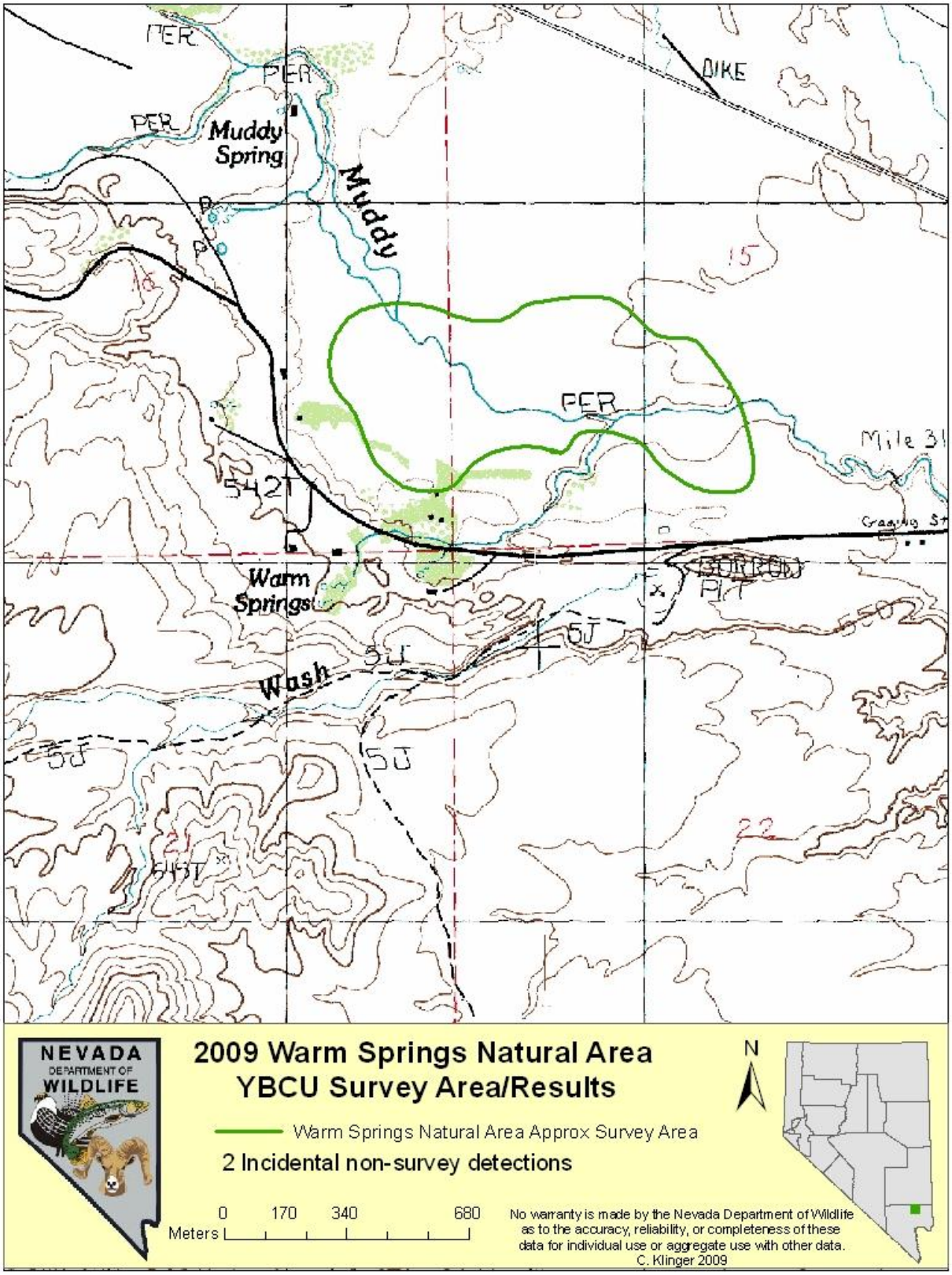
Attach a copy of USGS quad/topographical map or equivalent of the survey area, outlining the survey site, transects, patch size and shape and any nests and/or detections.

Comments (attach additional sheets if necessary):
Formerly two sites: Warm Springs Ranch and Pump Station, combined into Warm Springs Natural Area in 2008.
Transect 1: E704282 N4065492 to E704339 N4065745
Transect 2: E704493 N4065773 to E704791 N4065779
Transect 3: E705015 N4065704 to E705146 N4065657

Two non-NDOW detections by B. Lund: 6/27 vocal detection, and 7/29 visual detection.

YBCU Detection and/or Nest Locations

Detection/Nest Date	UTM Easting	UTM Northing	Detection/Nest Date	UTM Easting	UTM Northing
6/27-Vocal (B.Lund)	N/A	N/A			
7/29-Visual (B.Lund)	N/A	N/A			


PER
PER
PER
Muddy Spring
Muddy
DIKE
15
PER
Mile 31
542T
Warm Springs
Wash
5J
5J
5J
5J
22
NEVADA
DEPARTMENT OF
WILDLIFE
2009 Warm Springs Natural Area
YBCU Survey Area/Results
N
Warm Springs Natural Area Approx Survey Area
2 Incidental non-survey detections
0 170 340 680
Meters
No warranty is made by the Nevada Department of Wildlife as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
C. Klinger 2009

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009
Yellow-billed Cuckoo Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Site Name: Meadow Valley Wash—Mi 37, 42-44 Was site surveyed in previous year? Yes
If Yes, what site name was used? Same

County: Lincoln State: Nevada USGS Quad: Elgin & Elgin NE 1:24,000
Site Coordinates: Start: E See Comments N See Comments Datum: NAD 83
Stop: E See Comments N See Comments Elev: 1568 m

Survey # / Observer(s)	Date (m/d/y) Survey Time Survey Hours	# YBCU	Est # of Pairs	Est # of Terr.	New Nest? Y or N Nest #	Est Distance to bird	Direction to bird (in degrees)	Comments about this Survey
1. B. Conrad	Date: 6/25	0	0	0	N			Wind 0-2, 60-85% cloud cover
	Start:: 0745							
	Stop: 0925							
	Hrs: 1.6							
2 B. Conrad	Date: 7/10	0	0	0	N			
	Start: 0555							
	Stop: 0840							
	Hrs: 1.45							
3. C. Klinger	Date: 7/31	0	0	0	N			
	Start: 0550							
	Stop: 0825							
	Hrs: 2.6							
4. C. Klinger	Date: 8/13	0	0	0	N			
	Start: 0550							
	Stop: 0820							
	Hrs: 2.5							
	Date:							
	Start:							
	Stop:							
	Hrs:							

Overall Site Summary—Total only resident YBCU detections and pairs, if known.	Detect	Pairs	Territories	Nests	
	0	0	0	0	Were any YBCU's color banded? No
Total survey hours: 8.15					If Yes, report color combo in comments on last page

Name of Reporting Individual(s): Ben Conrad

Date Report Completed: 9/12/09 Page: 1 of 2

Fill in additional site information on last page of form.
Submit the original of this form. Retain a copy for your records.

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009

Yellow-billed Cuckoo Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Fill in the following information completely. Submit original form by Sept 30th. Retain a copy for your records.

Reporting Individual: Ben Conrad Phone #: 702-486-5127 x 3717
Affiliation: Nevada Department of Wildlife E-mail: christy@ndow.org

Site Name: Meadow Valley Wash—Mi 37, 42-44 Date Report Completed: 9/12/09

Did you verify this site name is consistent w/ that used in previous years? Yes
If different name, what name(s) was used in past? N/A
If site was surveyed last year, were the same general areas surveyed this year? Yes
If no, summarize in Comments, below.

Ownership or Management Authority for Survey Area (underline one): Private
Federal State Tribal Private Municipal/County
Name of owner or management (e.g. Pahranagat NWR): Private/Railroad

Length of area surveyed: 3.22 km (specify units)

Vegetation Characteristics: Overall, are the species predominantly comprised of (check one):
____ Native broadleaf plants (entirely or almost entirely, includes high-elevation willow)
_X_ Mixed native and exotic plants (mostly native)
____ Mixed native and exotic plants (mostly exotic)
____ Exotic/introduced plants (entirely or almost entirely)

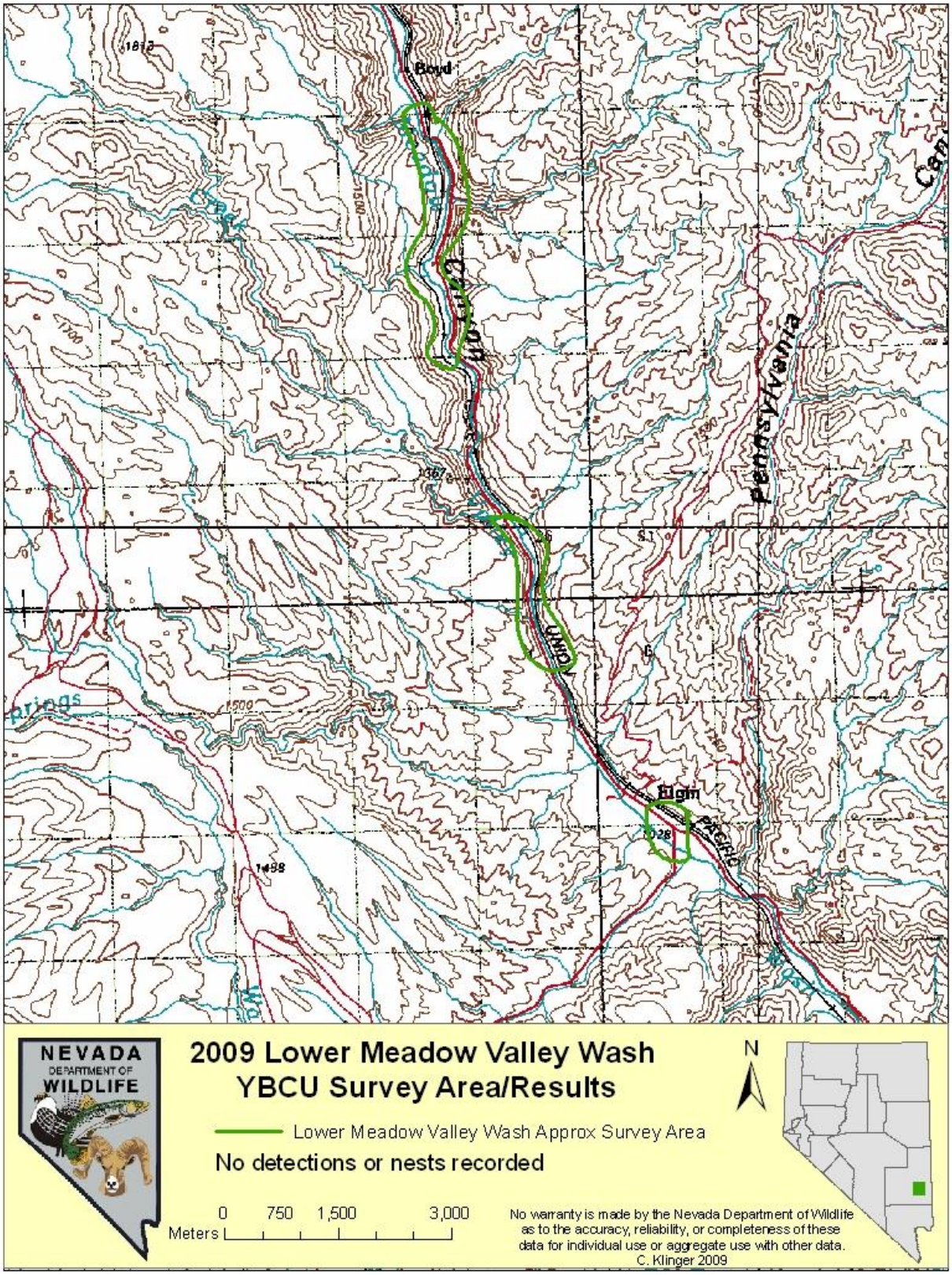
Identify the 2-3 predominant tree/shrub species: Cottonwood, ash, tamarisk, coyote willow
Average height of canopy: 8-30 m (Do not put range. Specify units)
Was surface water or saturated soil present at or adjacent to the site? Yes
Distance from site to surface water or saturated soil: 0 m (specify units)
Did hydrologic conditions change significantly among visits (did site flood or dry out?) No

Attach a copy of USGS quad/topographical map or equivalent of the survey area, outlining the survey site, transects, patch size and shape and any nests and/or detections.

Comments (attach additional sheets if necessary):
Meadow Valley Wash stream flows along transect, some places 5-6' wide x 5-6" deep.
Mi 37 Spot Survey: E 718266 N 4136101
Mi 42-44: E 715777 N 4142661 to E 715487 N 4145581

YBCU Detection and/or Nest Locations

Detection/Nest Date	UTM Easting	UTM Northing	Detection/Nest Date	UTM Easting	UTM Northing


Bond
Pennsylvania
Elgin
NEVADA
DEPARTMENT OF
WILDLIFE
2009 Lower Meadow Valley Wash
YBCU Survey Area/Results
N
Lower Meadow Valley Wash Approx Survey Area
No detections or nests recorded
0 750 1,500 3,000
Meters
No warranty is made by the Nevada Department of Wildlife as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
C. Klinger 2009

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009
Yellow-billed Cuckoo Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Site Name: Meadow Valley Wash—Mi 48-56 Was site surveyed in previous year? Yes
If Yes, what site name was used? Same

County: Lincoln State: Nevada USGS Quad: Caliente & Elgin NE 1:24,000
Site Coordinates: Start: E See Comments N See Comments Datum: NAD 83
Stop: E See Comments N See Comments Elev: m

Survey # / Observer(s)	Date (m/d/y) Survey Time Survey Hours	# YBCU	Est # of Pairs	Est # of Terr.	New Nest? Y or N Nest #	Est Distance to bird	Direction to bird (in degrees)	Comments about this Survey
1. B. Conrad	Date: 6/25	0	0	0	N			Wind 0-2 mph, 20-30% cloud
	Start:: 0500							
	Stop: 0741							
	Hrs: 2.68							
2 B. Conrad	Date: 7/10	0	0	0	N			
	Start: 0710							
	Stop: 1025							
	Hrs: 3.25							
3. C. Klinger	Date: 7/31	0	0	0	N			
	Start: 0600							
	Stop: 0900							
	Hrs: 3.0							
4. C. Klinger	Date: 8/13	0	0	0	N			
	Start: 0545							
	Stop: 0845							
	Hrs: 3.0							
5.	Date:							
	Start:							
	Stop:							
	Hrs:							
Overall Site Summary—Total only resident YBCU detections and pairs, if known.			Detect	Pairs	Territories	Nests	Were any YBCU's color banded? No	
Total survey hours: 11.93			0	0	0	0	If Yes, report color combo in comments on last page	

Name of Reporting Individual(s): Ben Conrad

Date Report Completed: 9/12/09 Page: 1 of 2

Fill in additional site information on last page of form.
Submit the original of this form. Retain a copy for your records.

NEVADA DEPARTMENT OF WILDLIFE Summer: 2009

Yellow-billed Cuckoo Survey and Nest Monitoring Form (Mod from AZGFD form NGTR 151)

Fill in the following information completely. Submit original form by Sept 30th. Retain a copy for your records.

Reporting Individual: Ben Conrad Phone #: 702-486-5127 x 3717
Affiliation: Nevada Department of Wildlife E-mail: christy@ndow.org

Site Name: Meadow Valley Wash—Mi 48-56 Date Report Completed: 9/12/09

Did you verify this site name is consistent w/ that used in previous years? Yes
If different name, what name(s) was used in past? N/A
If site was surveyed last year, were the same general areas surveyed this year? Yes
If no, summarize in Comments, below.

Ownership or Management Authority for Survey Area (underline one): Private
Federal State Tribal Private Municipal/County
Name of owner or management (e.g. Pahranagat NWR): Private/Railroad

Length of area surveyed: 3.22 km (specify units)

Vegetation Characteristics: Overall, are the species predominantly comprised of (check one):
____ Native broadleaf plants (entirely or almost entirely, includes high-elevation willow)
_X_ Mixed native and exotic plants (mostly native)
____ Mixed native and exotic plants (mostly exotic)
____ Exotic/introduced plants (entirely or almost entirely)

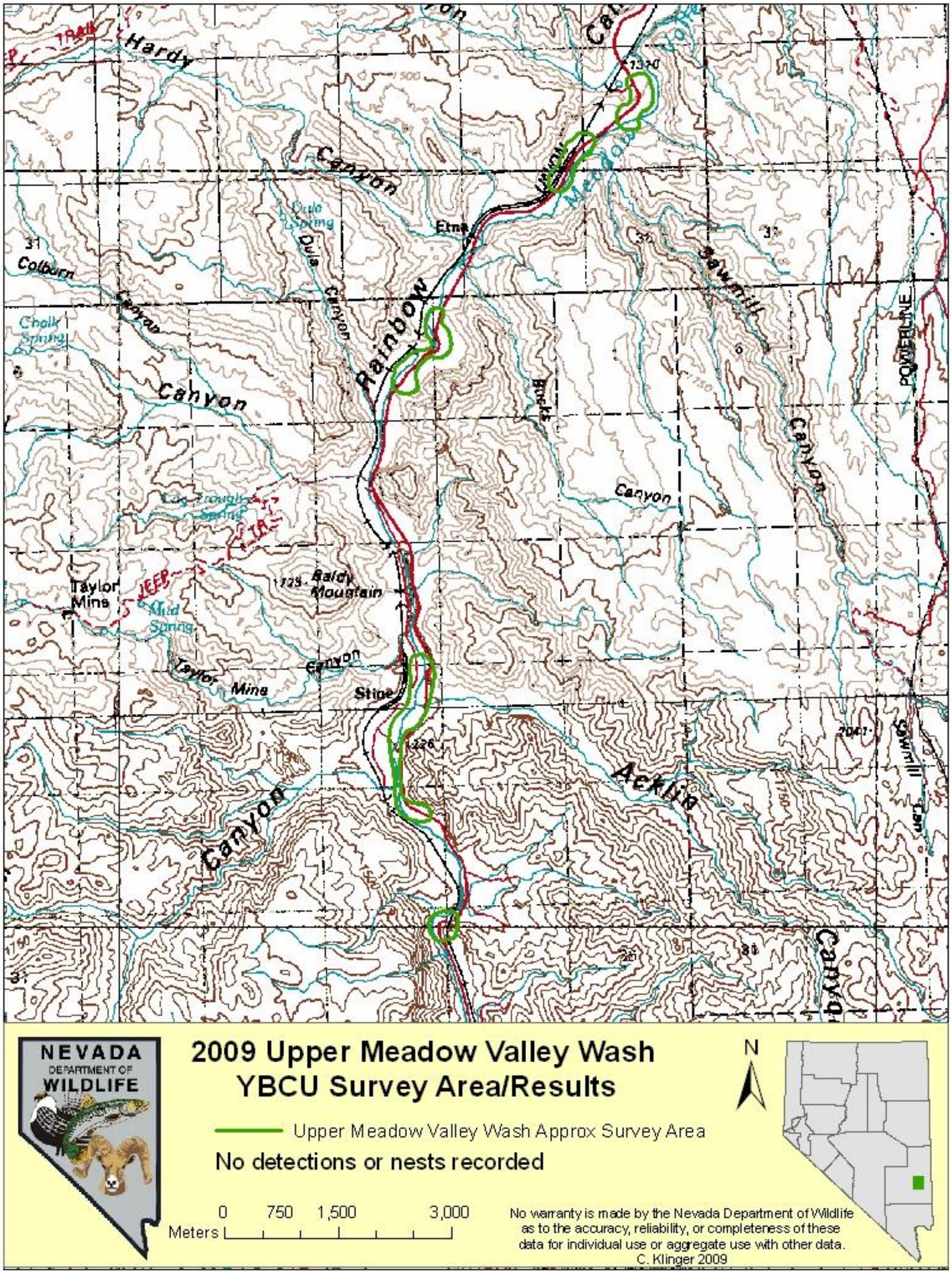
Identify the 2-3 predominant tree/shrub species: Cottonwood, black willow, ash
Average height of canopy: 12-19.6 m (Do not put range. Specify units)
Was surface water or saturated soil present at or adjacent to the site? Yes
Distance from site to surface water or saturated soil: 0 m (specify units)
Did hydrologic conditions change significantly among visits (did site flood or dry out?) No

Attach a copy of USGS quad/topographical map or equivalent of the survey area, outlining the survey site, transects, patch size and shape and any nests and/or detections.

Comments (attach additional sheets if necessary):
Meadow Valley Wash stream flows along transect, some places 5-6' wide x 5-6" deep.
Trestle: 714350/4150127, 1204 m
Shack: 713929/4151701 to 713888/4153720, 1249 m
Longhorn Cattle Co: 713758/4157295 to 714210/4158080, 1291 m
45 MPH Zone: 715861/4158932 to 716289/4160444, 1318 m
Rainbow Ranch: 716893/4161310 to 716703/4160765, 1331 m

YBCU Detection and/or Nest Locations

Detection/Nest Date	UTM Easting	UTM Northing	Detection/Nest Date	UTM Easting	UTM Northing


NEVADA
DEPARTMENT OF
WILDLIFE
2009 Upper Meadow Valley Wash
YBCU Survey Area/Results
Upper Meadow Valley Wash Approx Survey Area
No detections or nests recorded
N
0 750 1,500 3,000
Meters
No warranty is made by the Nevada Department of Wildlife
as to the accuracy, reliability, or completeness of these
data for individual use or aggregate use with other data.
C. Klinger 2009
Hardy
Canyon
Etna
Rainbow
Colburn
Chalk Spring
Canyon
Baldy Mountain
Taylor Mine
Taylor Mine
Canyon
Stine
Acklin
Canyon
Sawmill
Canyon
POWERLINE